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Cover: Long-eared Owl, *Asio otus*. Delmarva Peninsula, Worcester County, Maryland, 8 November 2008. Photographed by George M. Jett©.

EDITOR'S NOTE

Chandler S. Robbins: The Passing of an Ornithological Icon

It is with great sadness that I report the passing of Chandler S. Robbins on 20 March 2017 at the age of 98. Chan edited *Maryland Birdlife* from 1947 through 2014. A chronicle of his amazing life can be found in the spring 2015 issue of *Maryland Birdlife*. The current issue is dedicated to Chan's memory.

Latest AOS Checklist of North and Middle American Birds

This issue of *Maryland Birdlife* will utilize the American Ornithological Society (AOS; formerly AOU) Checklist of North and Middle American Birds through the Fifty-seventh Supplement (2016). The list order has changed extensively. Details of the changes can be found in:

Chesser, R.T., K.J. Burns, C. Cicero, J.L. Dunn, A.W. Kratter, I.J. Lovette, P.C. Rasmussen, J.V. Remsen, Jr., J.D. Rising, D.F. Stotz, and K. Winker. 2016. Fifty-seventh Supplement to the American Ornithologists' Union Check-list of North American Birds. *The Auk: Ornithological Advances* 133:544–560. Available at: <http://americanornithologypubs.org/doi/pdf/10.1642/AUK-16-77.1>.

New Statewide May Count Compiler

It is my pleasure to introduce Marilyn Veek as the Maryland Ornithological Society's new statewide May Count Compiler. The following is in Marilyn's words:

"There is nothing like the thrill of getting a great look at a new bird which previously only existed as a plate in a bird guide. On the other hand, birding the same areas repeatedly over seasons and years, whether my own property, a nearby park, or a sector on an annual count, is its own kind of pleasure—seeing what is new, what is the same, whether the White-throated Sparrows have appeared as a beacon of winter's approach. I particularly enjoy birding travel to new parts of the world; learning a bit about a country's culture and geography while watching its beautiful birds is a wonderful experience. I've been a member of the Frederick Bird Club for over 20 years, and currently serve as the Secretary. I am also the Calendar Editor for *The Maryland Yellowthroat*, which has brought me into contact with members from MOS chapters all over the state, as well as has sharpened my editing skills! I learned so much about birds and birding from Mike Welch during club meetings and field trips, that volunteering to serve as May Count Compiler when he moved to Arizona seemed only appropriate."

Eugene J. Scarpulla
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Long-eared Owl (*Asio otus*) Annual Frequency, Seasonal Chronologies, and Status on the Delmarva Peninsula

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Abstract: We determined the occurrence distribution, annual frequency, and seasonal chronologies of Long-eared Owls (*Asio otus*) on the Delmarva Peninsula using various types of records from 1941 through 2016. Records were distributed throughout the peninsula with annual peak frequencies fluctuating in a general 3–5-year periodicity. Seasonal records occurred in three periods where the frequency increased and subsequently decreased. An early-March to mid-April period approximating northbound migrants peaked on 19 March (± 3.2 SEM), a late-October to mid-December period approximating southbound migrants peaked on 14 November (± 2.4 SEM), and a late-November to late-March winter period peaked on 12 January (± 2.6 SEM). Historically there is no record of nesting on the peninsula, nor was it confirmed among the few spring and summer records in this study. The Long-eared Owl is a poorly understood species with little to nothing known about it regionally. This study provides some valuable insights to their life history on the Delmarva Peninsula, a more definitive status than that given for the region in the literature, and furnishes baseline information for future study.

Keywords: annual frequency, *Asio otus*, Delmarva Peninsula, distribution, Long-eared Owl, seasonal chronologies, status

Long-eared Owl (*Asio otus*) occurrence and nesting distribution east of the Great Lakes in North America is associated with the contiguous mountain regions north from central Pennsylvania through the Canadian Maritime Provinces. Records of the species occurring and nesting farther east and south are considered rare and local (Marks et al. 1994). Most owls withdraw in winter from northern parts of their range and may be found occasionally wintering as far south as central Georgia and southern Mississippi (Marks et al. 1994, Beaton et al. 2003, Mississippi Ornithological Society 2015).

Long-eared Owls are infrequently detected owing, to their secretive behavior with faint calls, their more post-dusk nocturnal activity in comparison to other

owl species, their superb cryptic plumage coloration and posturing when perched, and temporary seasonal occurrence in southeast regions with abundant prey and lack of prolonged snow cover. These factors make the species a difficult study subject and therefore data concerning their behavior, biology and phenology are limited. This may obscure the actual status of the species throughout their eastern North America range including the Delmarva Peninsula where the species is considered scarce/rare.

Additional factors complicate determining the actual status of Long-eared Owls in the region. One factor is the “broad-scale” at which the status for a species is sometimes assigned. Portions of three political jurisdictions (Delaware, Maryland, and Virginia) comprise the Delmarva Peninsula Coastal Plain. The jurisdictions contain various other physiographic regions to the north, west, and south. Most studies attribute a given species status to the entire political jurisdiction, and not to the individual physiographic regions within (Rives 1890, Kirkwood 1895, Pennock 1904, Rhoads and Pennock 1905, Hampe and Kolb 1947, Murray 1952). Few if any species are found equally dispersed across all physiographic regions due to variation in habitat and food availability within the different regions. Thus, assigning a species status to an entire geographic area, when that area’s boundaries are not based on any physiographic or ecological context, may be misleading and create an inaccurate picture of the owl’s status in the jurisdictional region.

Historical studies from around the turn of the 20th Century considered Long-eared Owls to be “uncommon” or “resident” on the Delmarva Peninsula despite more abundant concealing habitat and fewer observers to detect owls relative to more modern times (Rives 1890, Kirkwood 1895, Pennock 1904, Rhoads and Pennock 1905). Conversely, studies during the mid-20th Century classified the species status as “rare” (Hampe and Kolb 1947, Murray 1952, Stewart and Robbins 1958). Later studies associated the perceived less frequent detection and/or population decline to a mid-century surge in Great Horned Owl (*Bubo virginianus*) and Red-tailed Hawk (*Buteo jamaicensis*) populations (Bosakowski et al. 1989, Hess et al. 2000). These two species were afforded legal protection after a century of persecution by farmers and hunters. Competition for nest sites and small rodent prey by the Great Horned Owl and other raptors has been suggested as possibly limiting Long-eared Owl numbers in open lands of New Jersey (Bosakowski et al. 1989). There were also reports of Great Horned Owls and Red-tailed Hawks preying/attacking Long-eared Owls (Collins 1962, Bosakowski et al. 1989). It is uncertain whether these factors may have contributed to mixed status reports of “rare to uncommon” for studies including the Delmarva Peninsula in the 21st Century (Hess et al. 2000, Rottenborn and Brinkley 2007).

In this paper, we used regional publications, checklists, reports, seasonal counts, banding records and museum specimens of Long-eared Owl occurrences on the Delmarva Peninsula since the early 1900s to compile a comprehensive dataset. These data were then used to determine annual frequency, seasonal chronologies and status on the peninsula.

METHODS

Study Area

The Delmarva Peninsula Coastal Plain is located in the Mid-Atlantic region of North America and comprises a peninsula situated between the Atlantic Ocean on the east and Chesapeake Bay on the west (Figure 1). The peninsula is approximately 290 km (180 mi) long with a north/south aspect, nearly 110 km (68 mi) wide midway its length and tapers towards both ends. Alluvial deposits of silt, sand, clay, and gravel from glacier melt during the Miocene, Pleistocene, and Holocene epochs form the peninsula's substrates. The topography lacks pronounced relief and elevation is generally less than 30 m (98 ft) above sea level. Freshwater streams and rivers, brackish and saltwater tidal creeks, tributaries and bays deeply indent the landscape of prevalent cultivated agricultural fields while coniferous and deciduous forests cover most of the undeveloped areas. Other areas are characterized by herbaceous and forested freshwater wetlands, and herbaceous brackish and saltwater wetlands. Additionally linear barrier islands and bays characterize the coast with the Atlantic Ocean. Average temperatures range is -2.8° to 7.8° C (27° to 46° F) in January and 18.3° to 30.5° C (65° to 87° F) in July at the center of the peninsula. Annual precipitation averages 1143 mm (45 in), and snowfall, 533 mm (21 in). The humidity ranges 54% to 78% while prevailing west winds average 16.1 to 17.7 km/hr (10 to 11 mi/hr). The study area encompasses the entire Coastal Plain peninsula south of its interface with the Piedmont upland physiographic region.

Data Sources

Long-eared Owl records were extracted from sources given in Table 1, plus regional bird books and checklists cited herein. Of these records, two were found to be duplicates within the dataset, one gave no location, one was only reported in an unreliable source, and one museum inventory specimen could not be found in the collection. These records date from the last half of the 20th Century, could not be validated, and were therefore deleted from the dataset. All remaining records used in the dataset occurred during the period 1941–2016. Additionally, private individuals (noted in the acknowledgments) contributed Long-eared Owl records from their personal observations, counts, and/or records.

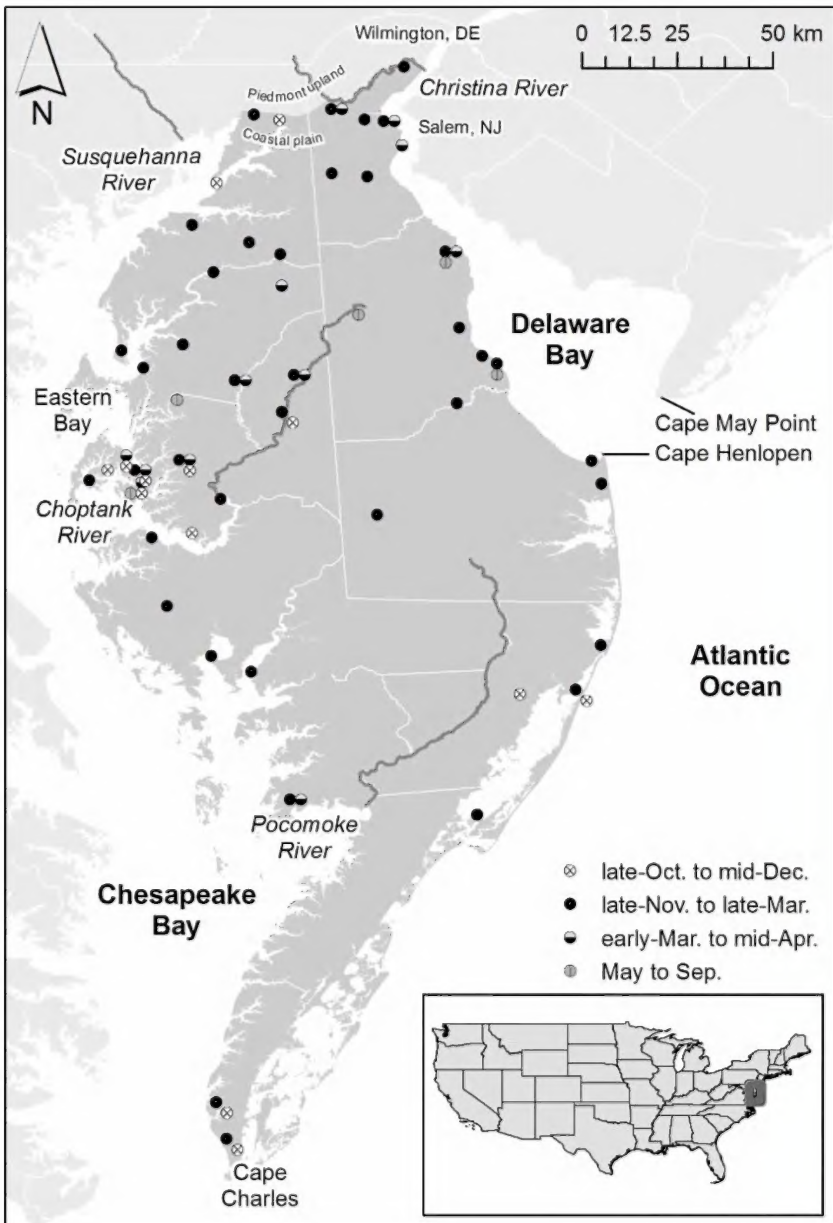


Figure 1. Delmarva Peninsula study area showing the distribution of 50 locations where 218 Long-eared Owls were recorded from 1941 through 2016 (some locations are represented by more than one dot).

Table 1. Publications, museum specimen inventories, and databases used in compilation of the Long-eared Owl dataset.

Journals and Databases	Data Period	URL
<i>Cassinia</i>	1890–2009	http://dvoc.org/Publications/Cassinia/Cassinia.htm
<i>Delmarva Ornithologist</i>	1964–1974	http://olddos.dosbirds.org/ornithologists
<i>Maryland Birdlife</i>	1945–2016	https://sora.unm.edu/node/132691 (2006–2016 hardcopy subscription)
<i>The Raven</i>	1930–2013	http://www.ccbbirds.org/resources/the-raven/
<i>North American Birds</i>	1999–2008	https://sora.unm.edu/node/209
<i>National Audubon Society Field Notes</i>	1994–1998	https://sora.unm.edu/node/209
<i>American Birds</i>	1973–1994	https://sora.unm.edu/node/209
National Audubon Society Christmas Bird Counts	1941–2014	http://netapp.audubon.org/cbcobservation/
eBird.org (Explore Data)	Through 1 Mar 2016	http://ebird.org/ebird/explore
<i>List of Caroline County Birds</i>	1946–1978	Fletcher et al. 1956, Fletcher et al. 1979
USGS Bird Banding Laboratory	1941–2016	Unpublished data retrieved 15 SEP 2016, Patuxent Wildlife Research Center, Laurel, MD, USA

Museum and University Bird Collection Inventories	Access Date	Data Sources
Yale University	1 Jan 2016	http://collections.peabody.yale.edu/search/
American Museum of Natural History	1 Jan 2016	http://sci-web-001.amnh.org/db/emuwebamnh/index.php
Philadelphia Academy of Science	5 Jan 2016	http://www.ansp.org/research/systematics-evolution/collections/ornithology/
Delaware Museum of Natural History	5 Jan 2016	http://www.vertnet.org/
Towson University		personal 1988 hard copy inventory (and L. Scott Johnson, in litt., 2010)
Salisbury University		personal 2015 hard copy inventory
University of Maryland (Horn Point & College Park campuses)		personal 1998 hard copy inventories
U.S. National Museum of Natural History	8 Jan 2016	http://collections.nmnh.si.edu/search/birds/

Data Analysis

We converted all records to presence-only data to account for methodological differences among records from the various data sources. These records consisted of single or multiple owls encountered at a single location. In five cases, single or multiple owls were seen at a single location on widely separate dates (>1 weeks). For these observations the first and the last dates were included, e.g., the first and last dates seen at a winter roost site. The locations of all records were geocoded and visualized on a map using ArcGIS 10.1 (Environmental Systems Research Institute 2012). We calculated the total number of records per year for the period 1941–2016 and plotted them to display the annual frequency. We grouped all records from different years to calculate the number of records per week and plotted them to visualize seasonal variation throughout the year. We excluded Christmas Bird Counts from the latter analysis because their inclusion would have disproportionately skewed wintering records falsely high during the annual count period. Using the plotted seasonal records, we identified three clusters during which the number of records increased and subsequently decreased (approximating mid-February to mid-April, late-October to early-December, and mid-December to mid-February), plus six scattered records during May–September. These periods suggest northbound and southbound migration and wintering periods with each period partly overlapping the adjoining period.

To better understand the extent of these periods and overlaps, we assigned each record to one of the seasonal periods. Records of single or multiple owls at historical or known roosts and all owl records in January to mid-February (wintering owls) were assigned to a late-November to late-March period; records of single owls found at random non-roost locations were assigned to either the northbound early-March to mid-April period or the southbound late-October to mid-December period depending on whether they occurred before or after the peak wintering months of January to mid-February. To assure compliance and accuracy we compared the range of these periods with published early/late arrival dates for migrant and wintering owls given for jurisdictions in the Mid-Atlantic region. Only six records were available for the May–September period, hence this period was excluded from analysis.

Finally, we calculated the mean date during which the number of records was highest for the three different periods. Dates were first converted to Julian days in order to ease calculations. The mean dates were then plotted together at the 95% confidence interval (2.5 and 97.5 percentiles). All analyses were conducted in RStudio Version 0.99.491 (RStudio 2015) built on R 3.2.0 (R Development Core Team 2016); plots were created using the ggplot package.

RESULTS

Composition of Records

We extracted and considered 218 valid Long-eared Owl records from the Delmarva Peninsula in 1941–2016. The annual Christmas Bird Counts comprised 121 owl records during the count period 14 December through 5 January involving 18 different count locations. An additional 97 records from 32 locations included 61 sightings other than Christmas Bird Count dates, 12 trapped and banded, eight found dead on the highway, eight heard calling, three purposely shot for collections, three found injured, one found sick, and one tangled in a fence.

Distribution of Records

The early-March to mid-April period records ($n = 15$) were distributed across the northern portion of the peninsula north of a line from Cape Henlopen at the mouth of Delaware Bay west to the mouth of the Choptank River on Chesapeake Bay with exception of one record on the north side of the mouth of the Pocomoke River on Chesapeake Bay (Figure 1). Conversely, 85% of the late-October to mid-December period records ($n = 26$) were evenly dispersed at locations south of a line from Cape Henlopen on Delaware Bay west to Eastern Bay on Chesapeake Bay. The late-November to late-March period records ($n = 171$ including 121 Christmas Bird Counts) were broadly distributed with 81% adjacent to Delaware Bay ($n = 60$), Chesapeake Bay ($n = 33$), and Atlantic Ocean ($n = 45$) tidewater, and the remaining at more inland locations ($n = 33$). There were six May–September period records all distributed north of a line from Cape Henlopen at the mouth of Delaware Bay west to the mouth of the Choptank River on Chesapeake Bay.

Annual Records

Long-eared Owls have been reported on the Delmarva Peninsula every year since 1964 (52 years) with the exception of 1972 and 1985 (Figure 2). Annual records since the mid-1940s fluctuated generally reaching highs every 3–5 years before an appreciable drop in the number of records the following year(s).

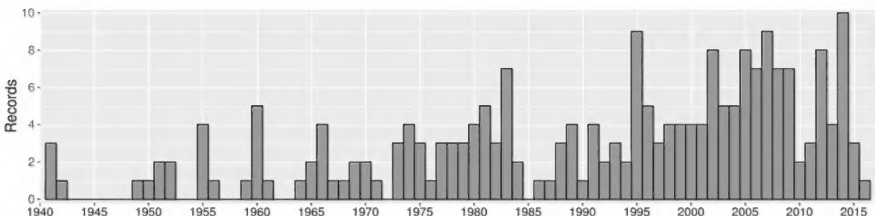


Figure 2. Long-eared Owl annual frequency of records ($n = 218$) on the Delmarva Peninsula.

Seasonal Records

Figure 3 shows the Long-eared Owl seasonal records on the Delmarva Peninsula. The early-March to mid-April period records ($n = 15$) ranged from the 2 March early arrival through the 9 April late arrival with a mean peak date for the number of records on 19 March (± 3.2 SEM) (Figure 3B). The late-October to mid-December period records ($n = 26$) ranged from the 23 October early arrival through the 17 December late arrival with a mean date on 14 November (± 2.4 SEM). The late-November to late-March period records ($n = 50$), excluding Christmas Bird Counts, spanned 24 November through 24 March with a mean peak date on 12 January (± 2.6 SEM).

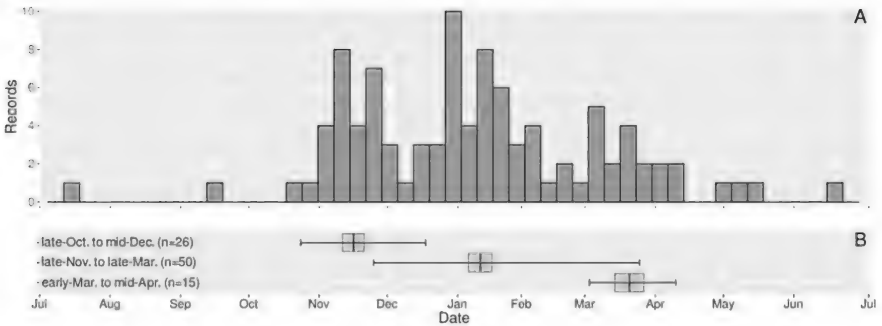


Figure 3. Long-eared Owl seasonal records on the Delmarva Peninsula.

A) Each vertical bar represents the number of records found in a week using data for the period 1941–2016 excluding Christmas Bird Counts. B) The vertical line in the box is the mean peak date for the period, the gray represents the confidence interval limits and line whiskers are the period extremes.

Age and Sex of Owls

Age and/or sex given in 28 records of Long-eared Owls trapped and banded, found sick or dead, or purposely collected, designated 16 (57%) as age unknown. Females comprised 85% of 13 owls for which the sex was determined and females were predominant among the migratory and wintering period owls. The age and sex for each of the four seasonal periods are summarized in Table 2.

Table 2. Long-eared Owl age and sex taken from seasonal records on the Delmarva Peninsula during 1941–2016. M = male, F = female, U = unknown sex.

	early-Mar–mid-Apr period (n = 9)			late-Oct–mid-Dec period (n = 10)			late-Nov–mid-Mar period (n = 7)			May–Sep period (n = 2)		
Sex	M	F	U	M	F	U	M	F	U	M	F	U
Age <1	-	-	-	-	1	2	-	-	-	-	-	-
Age >1	-	2	-	-	4	1	1	-	1	-	-	-
Age unknown	-	1	6	-	-	2	-	2	3	1	1	-

May–September Records

Owls calling during the first half of May at locations adjacent to the west shore of Delaware Bay in the northeast portion of the peninsula constituted three May–September records, while others included single owls found sick on a lawn in June and dead on the highway in July adjacent to the east side of Chesapeake Bay in the west-central portion of the peninsula, and another single reported occurring in September near the center of the peninsula.

DISCUSSION

Despite their infrequent detection and perceived rare status, 1941–2016 records of Long-eared Owls on the Delmarva Peninsula indicate they occur throughout the peninsula during migration and/or winter periods more frequently than generally thought. Additionally, there are a few warm-weather records, but no nest confirmations.

Distribution of Records

Most early-March to mid-April period records were distributed in the north portion of the peninsula while the late-October to mid-December period records favored the central and southern portions. Hawk watchers, banding stations, and bird watchers focus along the Atlantic and Chesapeake coasts during the fall migration season, which may have contributed to the seasonal difference found in the distribution. Owls found on the annual Christmas Bird Counts during the study contributed substantially to the late-November to late-March period records distribution.

Annual Records

Periodic spikes in annual frequency (generally every 3–5 years) noted in this study were also found in Long-eared Owl reports in New Jersey during 1966–1986 (Bosakowski et al. 1989). Periodic spikes were also found among banding station records in New York during 1981–1986 and New Jersey during 1980–

1988 (Slack et al. 1987, Duffy and Kerlinger 1992). In the northern boreal forest of eastern North America, and in northern Scotland and Fennoscandia such changes in owl frequency have been associated with low abundance of voles and lemmings in their usual distribution range, e.g., meadow voles, *Microtus* spp. (Harvey and Riddiford 1990); *Microtus* spp. and lemmings, *Lemmus* spp. (Korpimäki and Krebs 1996); and the Southern Red-backed Vole, *Myodes gapperi* (Cheveau et al. 2004). Fluctuations in Long-eared Owl abundance and reproductive success have been positively correlated to density of its primary microtine prey in Scotland (Field Vole, *Microtus agrestis* [Village 1981]) and western Finland (*M. agrestis* and Southern Vole, *M. levis* [Korpimäki and Norrdahl 1991]). Similarly, the closely related Short-eared Owl (*Asio flammeus*) exhibited a positive correlation between the abundance of voles/lemmings and owls in Alaska (Brown Lemming, *L. sibiricus* [Pitelka et al. 1955a, 1955b]), Scotland (*M. agrestis* [Village 1987]), and Finland (*M. agrestis* and *M. levis* [Korpimäki and Norrdahl 1991]). Monitoring prey was beyond the scope of this study, therefore we cannot with any certainty assign the periodicity to prey availability. Nevertheless, prey availability is a likely factor in driving the patterns in our data as is seen for Long-eared Owl in other studies. Finally, decreasing owl habitat with increasing observers utilizing improved detection technologies may have been responsible for the generally increasing annual frequency of owl records after the mid-20th Century.

Seasonal Records

Christmas Bird Counts frequently involve concerted efforts to locate rare species such as Long-eared Owls in the days just prior to the count and confirming their presence on count day. Therefore, Christmas Bird Counts were excluded from the seasonal analysis to avoid biasing the records peak for the wintering period during the 14 December through 5 January Christmas Bird Count period. The three periods seen in the data suggest migrant and wintering periods. The early-March to mid-April period records in this study correspond to northbound migrant Long-eared Owl capture periods of 29 March to 26 April and 21 March to 14 April at banding stations along the west and east portions of the south shore of Lake Ontario in New York (Beardslee and Mitchell 1965, Slack et al. 1987). The late-October to mid-December period records correspond with the 11 October to 27 November period of banding captures at the nearby Cape May Point, New Jersey banding station in 1980–1989 (Duffy and Kerlinger 1992). Owls banded at this station were rarely captured twice in a season suggesting they were south migrants and not resident birds (Katherine E. Duffy, in litt.). Also, a nocturnal visual study of southbound migrant owls at Cape May in 1982 detected owls most frequently during 12 October to 11 November (Russell et al. 1991). The late-October to mid-December period records also correspond to dates (10 October–18 November) for early southbound migrants on the Virginia Coastal Plain (Larner 1979, Kain 1987, Rottenborn and Brinkley 2007). All of

these seasonal chronologies lend support to Long-eared Owls being an annual migrant on the Delmarva Peninsula.

Despite evidence supporting the three periods as representing migrant and wintering periods, it is not without some caution. The seasonal analysis indicates an early-March to late-March overlap of 23 days between the late-November to late-March period records and the early-March to mid-April period records. Similarly there is a late-November to mid-December overlap of 24 days between the late-October to mid-December period records and the late-November to late-March period records. It is difficult to ascertain owl records to migrants or wintering. Furthermore, nest activity has been reported from mid-March into July in adjacent Piedmont and Ridge and Valley physiographic regions (Santner 1992, Rottenborn and Brinkley 2007, Ellison 2010, Gross 2012), while nothing is known about regional owl movements in winter. Regardless, this study contributes to further understanding of the migration and winter chronologies of this poorly understood species.

May-September Records

Historically, the Long-eared Owl was listed as “resident” in Delaware (Rhoads and Pennock 1905) and Virginia (Rives 1890), and “resident, but...not common” and “rare permanent resident” in Maryland (Kirkwood 1895, Hampe and Kolb 1947) which implies potential nesting on the Delmarva Peninsula. Regional studies since the first half of the 20th Century (Murray 1952, Stewart and Robbins 1958, Hess et al. 2000, Rottenborn and Brinkley 2007, Ellison 2010) restrict any potential nesting in those jurisdictions to Piedmont or higher elevations north, south, or west of the Coastal Plain peninsula. Nesting was documented just 3 km (2 mi) east of the Delmarva Peninsula on the New Jersey Coastal Plain near Salem (Stone 1965); 13 km (8 mi) north on the Delaware Piedmont north of Wilmington (B.C. Hiatt in Potter 1937), and 52 km (32 mi) west on the Maryland Piedmont near Baltimore (Kirkwood 1895, Kolb 1947a, Kolb 1947b, Stewart and Robbins 1958). Coincidentally, the three 21st Century owl calling records in May are on the west side of Delaware Bay just 12–32 km (7.5–20 mi) southeast of the late 1930s Coastal Plain nesting near Salem, New Jersey and the Piedmont nesting north of Wilmington, Delaware.

Necropsy of a male owl, found sick on a lawn, in June 1981 (JGR catalogue no.1045, USNM cat. No. 582672), and a female, found dead on the highway, in July 1983 (JGR catalogue no. 1400, USNM cat. No.597098) lacked frayed feathers, enlarged gonads, incubation patches, or other signs of nesting. It should be noted however, that with mid-March initiation of nest activity (Stewart and Robbins 1958, Marks et al. 1994, Ellison 2010) and subsequent egg-laying, incubation, and brooding of nestlings could have been completed by May and thereafter exhibit no physical signs of nesting. An owl reported on 14 September 1941 near the center of the peninsula suggests a resident or unusually early

southbound migrant. Clark (1975) found that Short-eared Owls shift their wintering and breeding areas in response to spatial and temporal abundance of small rodents. Perhaps small mammal population dynamics contributed to the occurrence of six spring and summer Long-eared Owl records. Indeed, all of the records coincide with years of high owl abundance on the peninsula. In summary, Long-eared Owl nesting has not been confirmed on the Delmarva Peninsula since the turn of the 20th Century despite several spring and summer records.

Owl Age and Sex

Handling of 28 Long-eared Owls trapped and banded, found sick or dead, or purposely collected enabled the possibility of determining the age and/or sex of individuals. Age determined for 12 November–April owls included nine greater than one-year-old (75%) and three less than one-year-old. Similarly, an overwhelming 97% of 37 northbound migrant Long-eared Owls banded at Nine Mile Point, New York in 1981–1986 (Slack et al. 1987) were greater than one-year-old. Conversely, only 26% of 203 southbound migrants banded at Cape May Point in 1980–1988 (Duffy and Kerlinger 1992) were greater than one-year-old. Age was not determined for any May–September owls. It should be noted that reliable external criteria for determining Long-eared Owl age/sex were lacking or limited prior to publication of the *Identification Guide to North American Birds* (Pyle 1997) that cautions age determination may be unreliable for some Long-eared Owls less than one-year-old or in the following year.

Sex determined for 13 owls in this study included 11 females (85%). In Britain, females constituted 78% of 36 Long-eared Owl southbound migrants banded at Fair Isle, Shetland, Scotland in 1984–1989 (Harvey and Riddiford 1990) while females comprised 76% of 101 owl mortalities autopsied in the United Kingdom during October–April 1963–1995 (Wyllie et al. 1996). Conversely, females comprised only 36% of 36 winter mortalities in Norway (Overskaug and Kristiansen 1994). In Fennoscandia, males winter close to their nest site and territory to assure retaining them for the following spring while females have no constraints and move to other areas in times of food shortage (Harvey and Riddiford 1990). It is not known if this type of movement contributed to the over-representation of females in this study while this domain remains largely unexplored for the Long-eared Owl. In addition, the sex ratios in our study and the southbound migrants banded in Scotland were based on small sample sizes while the contradictory ratio came from a Norway study 2414 km (1500 mi) north of this study. Therefore, it is difficult to make any conclusions about age and sex ratios in our study.

Status

The species general status given in late 19th Century into early 21st Century literature ranges from “rare resident” in the north portion of the peninsula to “rare resident, transient or wintering” in the southern portion (Table 3).

Table 3. Long-eared Owl historical status, occurrence and nesting on the Delmarva Peninsula Coastal Plain.

Political Jurisdiction	Status	Occurrence	Nesting	Source
Delaware	Throughout the year (statewide)	More abundant during cold months	Occasionally breeds within our limits	Pennock 1904
Delaware	Resident (statewide)	N/A	N/A	Rhoads and Pennock 1905
Delaware	Regular winter visitor, uncommon (statewide)	Nov-Mar	Newcastle County 1937; today DE should be considered south of normal breeding range	Hess et al. 2000
Maryland	Resident, not common (statewide)	No records for Coastal Plain	No records for Coastal Plain	Kirkwood 1895
Maryland	Rare permanent resident (statewide)	No records for Coastal Plain	No records for Coastal Plain	Hampe and Kolb 1947
Maryland	Rare and local permanent resident west of Chesapeake Bay, occasionally occurs on Coastal Plain	Fall and winter in Dorchester and Caroline Counties	No records for Coastal Plain	Stewart and Robbins 1958
Maryland	Year-round resident in nesting range (statewide)	N/A	No records for Coastal Plain	Ellison 2010
Virginia	Resident, but seldom seen (statewide)	Occurrence not defined	No records for Coastal Plain	Rives 1890
Virginia	Rare resident (statewide)	Recorded in winter most often	No records for Coastal Plain	Murray 1952
Virginia	Rare winter visitor (Coastal Plain)	18 Nov–20 May	No records for Coastal Plain	Larner 1979
Virginia	Rare winter visitor (Coastal Plain)	31 Oct–28 May	No records for Coastal Plain	Kain 1987
Virginia	Rare transient and winter visitor (Coastal Plain)	10 Oct–28 May	No records for Coastal Plain	Rottenborn and Brinkley 2007

Recent Wildlife Action Plans for jurisdictions comprising the Delmarva Peninsula rank the Long-eared Owl status as “highly state rare breeding and non-breeding” (S1B, S1N) in Delaware (Delaware Division of Fish and Wildlife 2015) and in Maryland (Maryland Department of Natural Resources 2015). In addition Delaware provides an SHB rank, i.e., known historically to breed in Delaware. Virginia provides no ranking for the species on either the Accomack or Northampton County Coastal Plain (Virginia Department of Game and Inland

Fisheries 2015). In view of the variable statuses applied to inclusive multi-physiographic jurisdictions during the past 74 years, it is no wonder status of the species is clouded and/or contradictory. This study found records of Long-eared Owls on the Delmarva Peninsula show regular annual frequency with seasonal chronologies during migrant and wintering periods while fluctuating abundance may decrease the number of records in some years.

Conclusion

This study of 1941–2016 Long-eared Owl records on the Delmarva Peninsula found them distributed throughout the peninsula with annual peak frequencies fluctuating in a general 3- to 5-year periodicity. Seasonal records show three distinct periods approximating migrant and wintering periods. Nesting could not be confirmed among six spring and summer records. Age and/or sex determinations for 28 owls found the majority were females greater than one-year-old. Annual and seasonal chronologies derived from the records provide a more definitive status than previously available in the literature. The Long-eared Owl is a poorly understood species with little known about it regionally. This study provides some valuable insights to their life history on the Delmarva Peninsula furnishing baseline information for future studies.

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AUTHORS' APPEAL: Long-eared Owls are highly sensitive to disturbance. If you happen upon a perched owl, immediately exit the area, do not return that season, and do not relate the owl's specific location to anyone. You could publicly report the owl occurrence, but never give the specific location.

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Novel Winter Bathing Behavior by a Merlin (*Falco columbarius*)

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Few reports of bathing in the family Falconidae have been published. Bent (1938) mentions it only for the Prairie Falcon (*Falco mexicanus*), as does Holthuijzen et al. (1987). Palmer (1988) describes bathing behavior for the Peregrine Falcon (*F. peregrinus*). Ristow et al. (1980) describes bathing by Eleonora's Falcon (*F. eleonora*), as does Eisermann (2005) for the Orange-breasted Falcon (*F. deiroleucus*). For the Merlin (*F. columbarius*), Warkentin et al. (2005) reported one bathing in rainwater, and Haak and Buchanan (2012) reported several instances of winter bathing behavior. Most of these accounts are of birds wading in shallow water.

Schmidl (1988) lists various observed bathing techniques by falcons, including stand-in bathing in shallow water, flight bathing on the wing through a series of dips and rises, rain bathing either perched or on the wing, and snow bathing. Palmer (1988) also describes flight-bathing behavior, whereby a flying falcon briefly contacts the surface of a water body at a low angle before immediately ascending. Eisermann (2005) reported a different type of flight-bathing behavior whereby Orange-breasted Falcons flew directly into rain-soaked leaves. Swann et al. (1993) report several instances of immature Peregrine Falcons engaging in swimming behavior, and speculate that the behavior was associated with bathing. In this account, I report on a presumed bathing behavior of a Merlin using a swimming technique.

OBSERVATION

The observation occurred from the Chesapeake & Ohio Canal National Historical Park (C&O Canal) towpath. The location of the observation was upriver from Milepost 91 near the confluence of Opequon Creek with the Potomac River. Temperatures at the start of the morning had been around (-9° C [15° F]) but by the time of the observation were just above freezing (0° C [32° F]). The observation was made using a 10x Zeiss binocular.

At approximately 1140 hours on 30 January 2016, I observed a Merlin flying several meters above the iced-over Potomac River. The falcon flew near the West Virginia shoreline within 200 m (656 ft) of where I stood, swooped low

over the river where the open Opequon Creek met the frozen Potomac River, then landed on the West Virginia shoreline on a broken tree trunk. Within about one minute, the Merlin flew from its perch and landed on the edge of the ice where the open water of Opequon Creek met the Potomac River. The Merlin stood in this location for another minute and then jumped into the open water breast first. It immediately flew from the water and landed at the edge of the ice. There it remained relatively motionless for several minutes, scanning the area by turning its head from side to side. The Merlin again suddenly plunged into the open water breast first, but rather than exiting the water immediately, it began to use its wings to row into open water away from the edge of the ice. It rowed in a shallow circle approximately 2 m (~7 ft) away from the ice shelf, returned to the edge of the ice, flapped out of the water, and stood on the ice. It then shook its feathers and soon flew back to the previous perch on the broken tree trunk. The Merlin then proceeded to preen its feathers. The entire sequence of activities lasted approximately 10 minutes, after which I departed with the Merlin still perched.

DISCUSSION

While few reported observations exist of bathing Merlins and none that I could find that involved swimming, it is well known that falcons regularly bathe. For Peregrine Falcons, Palmer (1988) suggested that this has been known for centuries. Swann et al. (1993) also stated that, "Peregrines have a strong 'motivation' to bathe daily." At a falconry event in Utah during late autumn, falcon owners, including those with Merlins, would break ice in frozen bird baths to allow their birds to bathe (Tom Humphrey, pers. comm., 4 February 2016). The observation of a Merlin bathing in winter by swimming may have been a result of a scarcity of open water resulting from extremely cold temperatures in the area at the time and an opportunity to exploit access to open water in an area with good visibility of the surroundings, which enabled scanning for potential predators. Swann et al. (1993) postulated a similar explanation for immature Peregrine Falcons swimming in Maine where access to shallow water for wading was limited.

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I thank Tom Humphrey (falconer and immediate Past President of the Frederick Bird Club) for relating the story to me about falconers breaking ice to allow their falcons to bathe. I also thank Joseph B. Buchanan (Natural Resource Scientist, Washington Department of Fish and Wildlife, Olympia, WA) for his thoughtful review of an earlier draft and for providing additional falcon bathing references. Comments of two other anonymous reviewers also improved an earlier draft.

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First Maryland Record of Pacific-slope/Cordilleran (“Western”) Flycatcher, *Empidonax difficilis/occidentalis*

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On 16 November 2015, I photographed an *Empidonax* flycatcher in southwestern Caroline County, Maryland. The bird caught my eye as I was birding along Poplar Neck Road at the edge of a scrubby field on the northeast side of the road. I had been playing a tape of Eastern Screech-Owl, *Megascops asio*, in order to attract the attention of passerines or other birds that might be in the area. At 11:55 a.m., out of the corner of my eye, I noted a bird actively flycatching in the small deciduous trees at the edge of the field about 50 ft (15 m) from where I was positioned. Although it is possible that the recording attracted the bird into the general area, it did not seem particularly interested in the sound from the tape. The bird was very active, perching on a branch then suddenly sallying out for an insect and flying back to the same perch or one nearby. Each time, when it first perched, the bird flicked its tail several times. It continued flycatching, sometimes landing in sight, but more often perching on branches that were out of my line of sight a few yards deeper inside the edge of trees and bushes. The bird seemed to do most of its foraging at about 3–5 ft (1–1.5 m) above the ground.

The bird was clearly an *Empidonax* (empid), based on its small size, olive upperparts, pale underparts, wing bars, and eye ring. Any empid is an unexpected species in late November in Maryland and is likely to be a rare species, or a very late-date breeding or migratory species. I noted that this bird had very bright yellow underparts, with a hint of olive on the upper breast, and a pale throat (Figure 1). The bird had a very prominent pale eye ring that was narrower at the top and bottom and extended out in a teardrop fashion at the rear. My photos did not capture the hint of a peak to the back of the head, which I saw through binoculars. Its wings were a sooty dark color with two light buff-colored wing-bars (Figure 2). I was never able to get a good sense of the relative length of the tail, but the primaries did not seem to extend to the base of the tail. The bird did not vocalize.

I made phone calls and sent texts with photos immediately, but unfortunately the bird was not seen again that day or in following days despite multiple efforts by other birders to re-find it. However, my description, photos, and the timing of



Figure 1. Pacific-slope/Cordilleran Flycatcher (“Western”) Flycatcher, *Empidonax difficilis/occidentalis*. Poplar Neck Road near Choptank, Caroline County, Maryland, 16 November 2015.



Figure 2. Pacific-slope/Cordilleran Flycatcher (“Western”) Flycatcher. Poplar Neck Road near Choptank, Caroline County, Maryland, 16 November 2015.

the bird's occurrence were sufficient to rule out Yellow-bellied Flycatcher (*Empidonax flaviventris*), the only other species with which this bird might have been confused. The Yellow-bellied Flycatcher is typically gone from Maryland by mid-October. The eye ring of the Yellow-bellied Flycatcher is usually circular and more rounded behind the eye, not showing the distinct teardrop profile of the bird I saw. The coloration of the underparts of the bird on Poplar Neck Road was also much brighter yellow than would be expected on a Yellow-bellied Flycatcher. Regarding the bill, which did not appear especially wide, I noted that the upper mandible was dark and the lower was yellowish-orange. The bill seemed a bit longer than what I would have expected for a Yellow-bellied Flycatcher, although Yellow-bellied does show a lot of variation in bill shape and size. Analysis of the secondaries (Figure 2) showed a buff-colored fringing pattern consistent with Pacific-slope/Cordilleran ("Western") Flycatcher (*Empidonax difficilis/occidentalis*) as compared to Yellow-bellied Flycatcher (Baumann et al. 2014). I submitted my photos and a written report to the Maryland/DC Records Committee, and the record was accepted in 2016 as a Pacific-slope/Cordilleran Flycatcher.

THE "WESTERN" FLYCATCHER SPECIES COMPLEX

In 1989, The American Ornithologists' Union split Western Flycatcher (*Empidonax difficilis*) into two species: Pacific-slope Flycatcher (*E. difficilis*) and Cordilleran Flycatcher (*E. occidentalis*) based on the work of Johnson and Marten (1988). The normal range for Pacific-slope Flycatcher is the Pacific coastal mountain ranges of Canada, the United States, and Mexico (Lowther et al. 2016b); for the Cordilleran Flycatcher, the range is the Rocky Mountains of the United States and Mexico (Lowther et al. 2016a). The two species are virtually indistinguishable in the wild (Lowther et al. 2016a, 2016b). In the western United States, the best characters for separation are voice, range, and habitat (Lowther et al. 2016a, 2016b). Obviously range and habitat are of no value when trying to identify these rare Northeast and Atlantic Coast vagrants. Voice is not always usable in the East, but DNA of scat (i.e., environmental DNA or eDNA) has occasionally been used to separate the species (eBird 2017).

SUMMARY OF NORTHEAST AND ATLANTIC COAST RECORDS

Members of the "Western" Flycatcher species complex are rare in the Northeast and along the Atlantic Coast. Table 1 shows the twelve state-bird-records-committee-accepted records for the species complex and whether the record was accepted for Pacific-slope or Pacific-slope/Cordilleran Flycatcher. There are no eastern records for Cordilleran Flycatcher. Only records-committee-accepted records are included in this list. The records cluster geographically between Massachusetts and North Carolina, with two outliers in Florida. Records have occurred between 14 September and 15 January, with five occurring in

November and three in December. The earliest accepted record occurred in 1981. When the decades are compared, one record occurred in the 1980s, three in the 1990s, three in the 2000s, and five in the 2010s.

Table 1. State-bird-records-committee-accepted records of Pacific-slope/Cordilleran Flycatcher for the Northeast and Atlantic Coast states.

State	Date	Location	Taxon	Citation
Maine	(no records)			MBRC 2017
Vermont	(no records)			VBRC 2016
New Hampshire	(no records)			NHRBC 2010
Massachusetts	10 Nov 2006	Manomet, Plymouth, Plymouth Co.	Pacific-slope/ Cordilleran	MARC 2013
Rhode Island	(no records)			RIARC 2016
Connecticut	1–7 Dec 2007	Osbornedale State Park, Derby, New Haven Co.	Pacific-slope/ Cordilleran	ARCC 2016
Connecticut	19–20 Dec 2015	Branford, New Haven Co.	Pacific-slope/ Cordilleran	ARCC 2016
New York	14–16 Sep 1995	Fire Island Lighthouse, Suffolk Co.	Pacific-slope/ Cordilleran	NYSARC 2015
Pennsylvania	16 Dec 1990	East Drumore Township, Lancaster Co.	Pacific-slope	PORC 2017
Pennsylvania	23 Nov 2012	State Game Lands 230, Cumberland Co.	Pacific-slope	PORC 2017
New Jersey	16 Nov 1981	Brigantine NWR, Atlantic Co.	Pacific-slope/ Cordilleran	NJBRC 2016
Maryland/DC	16 Nov 2015 (this record)	Poplar Neck Rd., Choptank, Caroline Co.	Pacific-slope/ Cordilleran	MD/DCRC 2016
Delaware	(no records)			DBRC 2015
West Virginia	(no records)			WVBRC 2016
Virginia	12 Nov 1993	Eastern Shore of Virginia NWR, Northampton Co.	Pacific-slope/ Cordilleran	VARCOM 2017
North Carolina	15 Jan 2000	Jordan Lake, Chatham Co.	Pacific-slope/ Cordilleran	CBCBRC 2015
South Carolina	(no records)			CBCBRC 2015
Georgia	(no records)			GCRC 2015
Florida	8 Jan 2015	Manakin Manor South, Leon Co.	Pacific-slope/ Cordilleran	FOSRC 2013, Greenlaw 2015
Florida	1–2 October 2015	Fort Pickens, Escambia Co.	Pacific-slope/ Cordilleran	Andrew W. Kratter in litt. 28 Mar 2017

Table 2 summarizes reports submitted to eBird (not necessarily officially-accepted records) of eastern sightings for Pacific-slope or Pacific-slope/Cordilleran Flycatcher. There are no Cordilleran Flycatcher reports. Some of these reports are merely date extensions of the Table 1 officially-accepted

records. Table 2 adds additional reports not found in Table 1 for New York, Pennsylvania, and Florida. Again, the reports cluster geographically between Massachusetts and North Carolina, with one outlier in Florida. Reports have occurred between 31 October and 22 January, with the majority of reports occurring from November to January.

Table 2. Submitted eBird Reports (not necessarily official state-bird-records-committee-accepted records) of Pacific-slope/Cordilleran Flycatcher for the Northeast and Atlantic Coast states (eBird 2017). “P-s/C” = Pacific-slope/Cordilleran

State	Date	Location	Submitted Taxon	State-accepted Record
Maine	(no reports)			
Vermont	(no reports)			
New Hampshire	(no reports)			
Massachusetts	10 Nov 2006	Manomet Center for Conservation Sciences, Plymouth, Plymouth Co.	Pacific-slope/ Cordilleran	yes
Rhode Island	(no reports)			
Connecticut	19–20 Dec 2015	Branford Hills School, Burban Dr., Branford, New Haven Co.	Pacific-slope	yes, as P-s/C
New York	18–23 Nov 2015	Central Park, New York, New York Co.	Pacific-slope	for future review (Willie D’Anna, in litt., 26 Mar 2017)
New York	8–10 Dec 2016	Inwood Hill Park, New York, New York Co.	Pacific-slope/ Cordilleran	for future review (Willie D’Anna, in litt., 26 Mar 2017)
Pennsylvania	18 Dec 1990	East Drumore Township, Lancaster Co.	Pacific-slope	date extension
Pennsylvania	18 Nov 2012	State Game Lands 230, Cumberland Co.	Pacific-slope/ Cordilleran	date extension as P-s
Pennsylvania	24–25 Nov 2012	State Game Lands 230, Cumberland Co.	Pacific-slope	date extension
Pennsylvania	20 Dec 2015–5 Jan 2016	Berks County Heritage Center, Berks Co.	Pacific-slope	submitted to PORC for review
New Jersey	(no reports)			
Maryland/DC	16 Nov 2015 (this record)	Poplar Neck Rd., Choptank, Caroline Co.	Pacific-slope/ Cordilleran	yes
Delaware	(no reports)			
West Virginia	(no reports)			
Virginia	12 Nov 1993	Eastern Shore of Virginia NWR, Northampton Co.	Pacific-slope	yes, as P-s/C
Virginia	29 Nov 1993	Eastern Shore of Virginia NWR, Northampton Co.	Pacific-slope	date extension?
North Carolina	15–22 Jan 2000	Jordan Lake, Chatham County	Pacific-slope/ Cordilleran	date extension
South Carolina	(no reports)			
Georgia	(no reports)			
Florida	31 Oct 2004	Fort De Soto Park, Pinellas Co.	Pacific-slope/ Cordilleran	not submitted to FOSRC (Andrew W. Kratter in litt., 28 Mar 2017)

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Sunbathing by Great Crested Flycatchers, *Myiarchus crinitus*

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Beginning summer 2008, I observed Great Crested Flycatchers, *Myiarchus crinitus*, each breeding season at the above address, on a lot dominated by mature American beech (*Fagus grandifolia* Ehrh.), tulip poplar (*Liriodendron tulipifera* L.), and several oak species (*Quercus* L. spp.). In 2008 and 2009, a pair nested nearly 50 ft (15 m) from the house, in a visible tree cavity. On numerous occasions between July 2009 and August 2016, I observed a Great Crested Flycatcher sunbathing on the vinyl cover of an outdoor spa on the house's deck. On two occasions, I recorded two Great Crested Flycatchers engaged in the behavior simultaneously, and on several occasions, one flycatcher was seen sunbathing while another was visible or calling nearby.

In 2015 and 2016, I recorded several sunbathings, and for some, but not all, I noted the date, time of day, air temperature, relative humidity, temperature of the vinyl surface (using an infrared or laser thermometer), duration of sunbathing, and the birds' activity. Sixteen sunbathing incidents were recorded on eight dates; in 2015: 6, 10, 19, 20, and 28 July, and 3 August; and in 2016: 11 and 16 July (Table 1). On the latter date, the accompanying photos were taken during multiple visits (Figures 1–4).

All observations began between 11:50 a.m. and 5:35 p.m. Duration of contact with the surface ranged from approximately 10 seconds to approximately 150 seconds. Air temperature ranged from 80° F (26.7° C) to 90° F (32.2° C). Relative humidity ranged from 39% to 71%.

The temperature of the vinyl surface (measured within several seconds of the birds' departure) ranged from 135.2° F (57.3° C) to 182.4° F (83.6° C). The vinyl surface temperature, unpleasantly hot to the touch, was higher than that of the surrounding wood deck by as much as 51° F (10.6° C).

Typical sunbathing activity included a bird landing first in a nearby tree, then flying down to the vinyl and immediately splaying wings and tail against the surface, then either scooting (propelling its body across the vinyl, its ventral surface constantly pressed against the vinyl, covering distances ranging from approximately 2–3 in [5.0–7.6 cm] up to approximately 6 ft [1.8 m]), or

remaining still, or alternating between scooting and stillness. Often, the head was cocked upward and the mouth gaped (once for approximately 120 seconds), most often while the bird remained still. When the bird scooted, it would maneuver so as to expose varying areas of its ventral surface to the vinyl. The longest observed period of scooting was approximately 17 seconds, and the longest stationary period was approximately 140 seconds.

Table 1. Incidental data collection of Great Crested Flycatcher sunbathing behavior, 2015 and 2016. (□ = no data collected)

Date	Time	Air Temperature (° F/° C)	Relative Humidity (%)	Surface Temperature (° F/° C)	Duration (seconds)	Scooting (seconds)	Stationary (seconds)
06 Jul 2015	1600	□	□	□	□	□	□
10 Jul 2015	1150	80/26.7	48	□	□	□	□
10 Jul 2015	visit #2	□	□	□	□	□	□
19 Jul 2015	1201	90/32.2	71	173.0/78.3	150	10	140
20 Jul 2015	1343	90/32.2	57	182.4/83.6	21	17	4
28 Jul 2015	1543	89/31.7	50	158.4/70.2	140	10	130
28 Jul 2015	1548	89/31.7	50	159.2/70.7	106	4	102
03 Aug 2015	1250	88/31.1	39	181.0/82.8	10	10	0
11 Jul 2016	1630	□	□	135.2/57.3	□	□	□
11 Jul 2016	visit #2	□	□	□	□	□	□
11 Jul 2016	visit #3	□	□	□	□	□	□
11 Jul 2016	1735	□	□	□	□	□	□
16 Jul 2016	1555	86/30.0	□	163.4/73.0	104	0	104
16 Jul 2016	1600	□	□	□	60	□	□
16 Jul 2016	1610	□	□	□	60	□	□
16 Jul 2016	1625	□	□	□	92	□	□

On 11 July 2016, four sunbathings were recorded between 4:30 p.m. and 5:35 p.m. On 16 July 2016, four sunbathings were recorded between 3:55 p.m. and 4:25 p.m.

While two other species—Carolina Wren (*Thryothorus ludovicianus*) and Blue Jay (*Cyanocitta cristata*)—were observed sunbathing on the wooden deck and rail, only the Great Crested Flycatchers were seen sunbathing on the vinyl. The Great Cresteds were never observed sunbathing on any surface other than the vinyl.

DISCUSSION

Published literature reports sunbathing by various species of birds. Hauser (1957) proposed two categories of sunbathing: “voluntary,” where a bird



Figure 1. Great Crested Flycatcher sunbathing location on the vinyl cover of an outdoor spa. Annapolis, Maryland, 16 July 2016. (Note that a Blue Jay is also sunbathing on the railing)



Figure 2. Great Crested Flycatcher sunbathing. Facing right. Annapolis, Maryland, 16 July 2016.



Figure 3. Great Crested Flycatcher sunbathing. Facing front. Annapolis, Maryland, 16 July 2016.



Figure 4. Great Crested Flycatcher sunbathing. Facing away. Annapolis, Maryland, 16 July 2016.

intentionally seeks a sunlit area, and “compulsory,” where the bird does not seek the situation (e.g., on a sunlit shiny metal platform feeder). Goodwin (1967) also mentioned shielding of nestlings by raptors and herons as a form of compulsory sunbathing, but stated that most sunbathing is voluntary. Kennedy (1969) summarized six possible functions for voluntary sunbathing: 1) sunrise thermoregulation as observed in Turkey Vultures (*Cathartes aura*), Black Vultures (*Coragyps atratus*), and Double-crested Cormorants (*Phalacrocorax auritus*) (Curry-Lindahl [1970] also documented this behavior in Reed Cormorants [*Microcarbo africanus*].); 2) ectoparasite control; 3) drying, as observed in cormorants and Anhingas (*Anhinga anhinga*) after leaving the water; 4) vitamin D production from a precursor in the uropygial gland secretion; 5) a possible role in molting; and 6) increased production of the uropygial gland secretion. Horsfall (1984) further elaborated on these possible functions. Lanyon (1958), studying a hand-raised Western Meadowlark (*Sturnella neglecta*) and a similarly-raised European Starling (*Sturnus vulgaris*), observed that sunbathing was initiated by heat and not light.

Although Miller and Lanyon’s review (2014) found no published data on sunbathing by Great Crested Flycatchers, Hauser (1957) had previously observed three Great Crested Flycatchers on 25 June 1955, 1:30–3:00 p.m., sunbathing on a primarily elm (*Ulmus* L. sp.) leaf compost heap. The air temperature was 90° F (32° C) and that of the compost heap’s surface was 140° F (60° C). My Internet search also found several photos of sunbathing by Great Crested Flycatchers (Brown 2011, Tallman 2011, Roberts 2015, Zee 2015, Bacquie 2016).

Five other *Myiarchus* species (Ash-throated Flycatcher, *M. cinerascens*; Brown-crested Flycatcher, *M. tyrannulus*; Dusky-capped Flycatcher, *M. tuberculifer*; La Sagra’s Flycatcher, *M. sagrae*; and Nutting’s Flycatcher, *M. nuttingi*) can occur in the United States (Dunn and Alderfer 2006). Cardiff and Dittmann (2000) reported that there was no published literature on sunbathing for Ash-throated Flycatcher. They reported the same for Brown-crested Flycatcher (Cardiff and Dittmann 2002). I could find no reports for those two species or for either La Sagra’s Flycatcher or Nutting’s Flycatcher. Tweit and Tweit (2002) reported that Skutch (1960) had observed sunbathing by a Dusky-capped Flycatcher. Skutch’s account stated:

“Once while I sat in a blind in the forest on Barro Colorado Island [Panama], watching a nest of the Black-throated Trogon [*Trogon rufus*], a Dusky-capped Flycatcher sunned itself in a patch of sunshine that fell on a prostrate tree close beside me. Lying flat on the trunk, it spread its wings and fluffed out its body feathers to let the sun’s rays penetrate deeply into them.”

The behaviors exhibited by Great Crested Flycatchers on the vinyl cover of my outdoor spa (i.e., stationary with splayed wings and tail against the vinyl surface, head cocked upward, mouth gaped) are all similar to those detailed in Hauser (1957). Considering the six possible functions for voluntary sunbathing (Kennedy 1969), two can be immediately eliminated in this situation. The observations occurred during the warmest part of the day, thereby eliminating sunrise thermoregulation. The flycatchers were not wet prior to sunbathing, thereby eliminating feather drying. Whether uropygial gland secretions or molting were involved, is unknown.

Ectoparasite control seems a viable hypothesis for my observations of sunbathing by Great Crested Flycatchers. Blem and Blem (1992) observed Tree Swallows (*Tachycineta bicolor*), Violet-green Swallows (*T. thalassina*), and Barn Swallows (*Hirundo rustica*) sunbathing on a shiny aluminum roof. They found the behavior to be consistent with either ectoparasite removal or soothing of skin areas involved in molting. Blem and Blem (1993) conducted experiments to see if sunbathing had an effect on ectoparasite load. One group of swallows was treated with a pesticide and a control group was not. They found that the control group sunbathed substantially more than the pesticide-treated group (23 vs. 2 visits, respectively) during the two-week expected efficacy of the pesticide treatment. During the subsequent two-week period, sunbathing visits increased for both groups, but remained higher for the control (49 vs. 29 visits). Blem and Blem surmised that ectoparasite control was the best explanation for this behavior. The actual mechanism for ectoparasite control by sunbathing was unknown, but various hypotheses mentioned were that high temperatures might kill, immobilize, or discourage ectoparasites; high temperatures might possibly concentrate ectoparasites for removal by preening; or sunlight itself may have a pesticidal effect (Blem and Blem 1993). Control of feather-degrading bacteria has also been mentioned as a reason for sunbathing (Gunderson 2008). Saranathan and Burt (2007) found that sunlight inhibited the growth of feather-degrading bacilli, a common inhabitant on avian plumage.

I speculate that there is a direct relationship between temperature and ectoparasite control, and that by sunbathing on the vinyl surface rather than the cooler wooden deck and rails, the Great Crested Flycatchers sought the hottest surface they could find/tolerate.

Although there is photo documentation of sunbathing by Great Crested Flycatchers on the Internet (Brown 2011, Tallman 2011, Roberts 2015, Zee 2015, Bacquie 2016), my observation may be only the second account in the published literature.

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Cedar Waxwings (*Bombycilla cedrorum*) Observed Feeding on Flying Insects

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Abstract: The frugivorous Cedar Waxwing (*Bombycilla cedrorum*) subsists most of year on a diet of fruit nutritionally rich in sugars, but during spring, replaces fruit with a substantial amount of protein-rich plant pollen and insect prey. Studies report waxwing pursuit of flying insects in flycatcher-like sallies, but details of the behavior are lacking or poorly described. I report here waxwings observed aerial feeding on swarming ants (Hymenoptera: Formicidae). The waxwings used short, ungraceful sallies, generally without turns, and landed on nearby branches as soon as possible. Feeding on swarming insects during March–June suggests an opportunistic behavior to replace a dietary requirement during a portion of the year when sugar-rich fruit are not available; however, reasons for the dietary change may not be fully understood.

Keywords: aerial feeding, *Bombycilla cedrorum*, Cedar Waxwing, *Prenolepis imparis*, swarming Winter Ants

The Cedar Waxwing (*Bombycilla cedrorum*) is one of the most frugivorous birds in North America, with fruit comprising 70–84% of its diet (Stiles 1984, Witmer 1996). However, during March–June when fruit is scarce or absent, their diet includes substantial amounts of insects and flower parts for reasons not clearly understood (Beal 1893, Witmer 1996). Most individuals glean insects from vegetation foliage, but several studies also report aerial sallies to capture flying insects (Crouch 1936, Bartlett 1956, Harlow 1971, Pinkowski 1976, McPherson 1987, Witmer 1996, Witmer et al. 2014). These sallies are likened to those of flycatchers, but give little or no definitive descriptions of the behavior. I give here a more comprehensive description of the behavior, the prey, and potential reasons for the seasonal change in the diet.

OBSERVATION

Walking from within a willow oak-loblolly pine (*Quercus phellos* L.-*Pinus taeda* L.) association forest (Brush et al. 1980) in St. Michaels, Talbot County, Maryland on 8 March 2016 at 1430 hours, with an ambient temperature of 18.3° C (69.4° F), a flock of 28 Cedar Waxwings suddenly landed on top of a leafless

sweetgum (*Liquidambar styraciflua* L.) at the forest edge directly in front of me. I quickly halted, becoming motionless.

Upon landing, individual waxwings flew down and dispersed throughout branches of the sweetgum and the interior of an approximately 10 m (33 ft) tall adjacent southern magnolia (*Magnolia grandiflora* L.). Magnolia leaves covered only the outer portion of the branches, thus the tree's interior was open except for the bare branches emanating from the trunk. Waxwings quickly flitted from branch to branch of the gum, but mostly within the shaded interior of the magnolia. They appeared to be chasing some minute flying prey.

I eventually caught glimpses of sparkling clear-wing movement of tiny flying insects that were the object of the waxwings interest. After visual acclimation to the lighting situation, I realized there were hundreds or possibly thousands of tiny insects flitting about, perhaps staging or swarming within the magnolia branches and foliage.

The method used by waxwings to capture flying insects in the tree interior took several forms. It began from a branch posture of nearly 45° where waxwings appeared to be visually trying to locate aerial prey in front of them. Birds then simply darted forward, snatched the insects in the air, and continued nearly straight-ahead to another branch within the tree's interior. Others darted forward to snap prey in the air, and then turned abruptly to return and land near or adjacent to the departure branch. Still others, perched near openings in the exterior foliage, used a similar method, i.e., they darted outside the foliage to snatch an aerial insect then came back within the tree interior on openings lower in the foliage to land on a bare branch.

Ungraceful short sorties ranged up to approximately 3 m (10 ft) both inside and outside the tree foliage. Near midair collisions suggest limited abilities and/or unfamiliarity with this type of feeding behavior. Birds were silent during the 25-minute feeding event throughout the interior of the tree, with activity descending within 2 m (7 ft) of the ground and/or the observer.

After the feeding activity ceased and the waxwings departed, I netted 20 of the tiny (~3 mm [~0.1 in] long) flying insects for later identification. I forwarded the specimens for identification to Samuel E. Droege and Eugene J. Scarpulla at the Bee Inventory and Monitoring Laboratory (BIML) at the United States Geological Survey's Patuxent Wildlife Research Center in Beltsville, Maryland, where the insects were determined to be male alate (winged) ants, mounted, and photographed (Figure 1). The ant specimens were forwarded for species identification to Maryland ant specialist Timothy Foard at i2L Research USA, Inc. (i2L) in Baltimore, Maryland where they were identified as Winter Ants, *Prenolepis imparis* (Say) (Hymenoptera: Formicidae: Formicinae).



Figure 1. Winter Ant, *Prenolepis imparis* (Say) (Hymenoptera: Formicidae: Formicinae). Alate male. Body length: ~3.0 mm (mean, median, and mode; n = 13; measured to closest 0.5 mm, mouth hypognathous). **Top left:** frontal view; **top right:** lateral view; **bottom:** dorsal view. Specimens collected by Jan G. Reese in St. Michaels, Talbot County, Maryland on 8 March 2016 and photographed by Samuel W. Droege on 19 July and 9 September 2016.

I returned to the magnolia tree at the same time on three subsequent balmy days, but never again saw the insects or waxwings.

DISCUSSION

Observed aerial feeding in mid-afternoon on a late winter day was synonymous with the warmest period of the day when flying insects are most likely active. Aerial feeding has been reported in other studies that also took place during the warmest part of the day, 1100–1700 hours, from mid-March to September (Bartlett 1956, Baird and Meyerriecks 1965, Harlow 1971, Pinkowski 1976).

Waxwing aerial feeding has been observed most often in June–July (Bartlett 1956, Harlow 1971, Witmer 1996). Many of these events took place over ponds and streams which had emerging stoneflies (Plecoptera) or mayflies (Ephemeroptera) (Crouch 1936, Bartlett 1956, Pinkowski 1976, Witmer et al. 2014), or at other insect mating swarms and dispersal of flying ants (Baird and Meyerriecks 1965, Muller and Berger 1965, Harlow 1971). All of these occurrences suggest opportunistic feeding. Beal (1893) believed waxwings consume some quantity of insects at all times if they are easily obtained. Beal's observation suggested opportunistic aerial feeding since it was done in late winter, earlier than other studies, and a plentiful crop of American holly (*Ilex opaca* Aiton) was within view of the observed aerial feeding. Similarly, a study of waxwing winter fruit preference in Norman, Oklahoma in 1984–1985 found American holly berries of low preference when notable consumption of insects started in March (McPherson 1987).

Other waxwing studies also describe slower and less graceful movements than flycatchers or other species (Harlow 1971, Witmer et al. 2014), shorter flights (Pinkowski 1976) seldom returning to the origin branch (Bartlett 1956), and disregard for close proximity of the observer (Crouch 1936). Conversely, one study reports frequent returns to the origin branch (Harlow 1971). Waxwings have been credited with “hovering” to harvest fruit (Witmer et al. 2014) and “fluttering” while pursuing flying prey (Bartlett 1956). It appears both of these behaviors could be an adventitious strategy in aerial feeding. I observed no hovering or fluttering. On one occasion however, a waxwing appeared to miss the intended flying prey, thrust its wings into a vertical position in order to stop forward movement while simultaneously snapping or grabbing for the prey a second time. The bird then lost altitude and forward momentum, suddenly dropped, repositioned its wings, turned, and landed on a convenient branch. This behavior may be related to the fluttering observed by Bartlett (1956). The spirit, agility, and lack of finesse in Cedar Waxwing aerial feeding may be related to limb proportions, wing-loading ability, feather and bill structure, visibility, or other morphological features in comparison to flycatchers (Fitzpatrick 1985, Norberg 1986, Witmer 1996, Warrick 1998).

Winter Ants are commonly found throughout the continental United States. Nests are usually located in damp soils of habitats such as forests, forest edges, fallow fields, and around buildings (Klotz et al. 2008, Ellison et al. 2012). The species is cryophilic and commences foraging with temperatures around 0° C (32° F), thus it is one of the first ants to become active early in the year with nuptial flights commonly occurring by March–April (Klotz et al. 2008). Colonies actively forage in late-winter to mid-spring and mid-fall to early-winter while aestivating during the warmer months (Fisher and Cover 2007, Klotz et al. 2008).

Alate ants comprised seven percent of all insects found in Cedar Waxwing stomachs collected in 1885–1950 (Beal 1893, Witmer 1996). Many of those ants appeared to belong to the genus *Camponotus* Mayr (Formicidae: Formicinae). In Wisconsin during 1958–1963, prey in nine incidences of aerial-feeding waxwings during 28 August–22 September involved *Lasius alienus americanus* (Foerster) (Formicidae: Formicinae) (Muller and Berger 1965). Similarly, 13 species of birds, including Cedar Waxwings, were identified aerial-feeding on *L. alienus* on 23 August 1961 in Massachusetts (Baird and Meyerriecks 1965).

Waxwings appear to function well and maintain body mass for extended periods during the year on a ripe fruit diet nutritionally rich in various sugars; however during spring, consumption of fruit diminishes for several weeks while being replaced by a substantial amount of high protein plant pollen and insect prey (Witmer 1996, Witmer et al. 2014). A total of 212 waxwing stomachs collected in 1885–1950, mostly from eastern North America, contained insects in April through November being most frequent during May–June (Beal 1893, Witmer 1996). Flower parts (stamens and petals) comprised 44% of the waxwings diet in May and insects 41% when fruit crops were at a low or not available (Witmer 1996, Witmer et al. 2014). These observations further support the notion that a March–June slack period of fruit availability leads to supplemental feeding of plant and insect protein to replace a dietary requirement in preparation for migration, reproductive activities, or until preferred ripe fruit are again plentiful in July.

For instance, a hypothesis suggests in the temperate zone, adult frugivorous species such as waxwings have evolutionarily switched to a largely protein diet during the reproductive season lessening pressure on plants to produce fruit during the early and/or shorter growing season (Morton 1973). Additionally, frugivorous nestlings fed a largely protein diet during this time fledged in a shorter period of time than those on a fruit diet, while the shorter nestling period also reduces predation risk for nestlings.

Witmer (2001) noted nutritional sugary fruit of European cranberrybush (*Viburnum opulus* L.) in New York persisted through the winter, to be eaten

primarily by waxwings in spring when other fruits were not available. The waxwings also ate at this time nutritional, protein-rich, male catkins of eastern cottonwood (*Populus deltoides* W. Bartram ex Marshall). Further investigation found secondary compounds in the pulp of aged cranberrybush fruit made it acidic. The study suggested that in spring, waxwings consume foods rich in protein to produce bicarbonates as a buffer to the acid in the dehydrated fruit. Thus, hypotheses and waxwing studies indicate the spring dietary addition of protein-rich foods is still not fully understood.

In summary, numerous studies report March–September waxwing aerial feeding on swarming insects. The behavior is believed opportunistic and/or to meet a dietary requirement at a time of year when fruit are scarce or not available. In this observation, waxwing aerial feeding was generally a slow, straight, short, ungraceful sally followed by a landing at the nearest convenient branch rather than returning to the origin branch. The prey was from a mating swarm of alated Winter Ants.

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“A Berry Good Day” by Ellen Lawler

Ellen painted this watercolor (the original is in color) of Cedar Waxwings in March 2017. For references, she used two photographs taken along the C & O Canal in Cumberland, Maryland, in October 2015.

2016 Maryland Mid-winter Bird Count: Corrigendum

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The narrative of the 2016 Maryland Mid-winter Bird Count article (Fluke 2016), mistakenly reported a Boat-tailed Grackle for Howard County. The sighting should have been reported as a Baltimore Oriole.

Table 3 of the article also showed one Boat-tailed Grackle for Howard County that should have been recorded as one Baltimore Oriole. Hence, there were no Boat-tailed Grackles on the entire Mid-winter Bird Count, and alternatively there was one Baltimore Oriole. The corrected data lines for the blackbirds in Table 3 should read as follows:

Species	C&O	FAAS	ACAS	FR	CA	HO	BA	HA	KE
Red-winged Blackbird	65	1	155	80	1114	228	270	1032	
Eastern Meadowlark			14			1	1	16	
Rusty Blackbird							4	5	
Common Grackle				4001	134	39	215	10,273	
Brown-headed Cowbird			60	4	211		129	71	
Baltimore Oriole						1			
blackbird sp.			300			8			

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2016 Maryland May Count

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The annual Maryland May Count was held on Saturday, 14 May 2016. Results were submitted from 22 of Maryland’s 23 counties, two more than submitted results in 2015 (Table 1).

Weather statewide on 14 May was clear and calm in the morning, with a front accompanied by thunderstorms, gusty winds, and rain moving through from west to east in the afternoon. Temperatures were as low as 36° F (2° C) in Garrett County in the morning, to as high as 77° F (25° C) in Dorchester County at 4:11 p.m. just before the front arrived. Calvert and Dorchester reported wind gusts up to 45–50 mph (72–80 kph) with the front.

Table 1. 2016 Maryland May Count: participating counties, county codes, and compilers. (The dashed line separates the Western and Eastern Shore counts.)

County	Code	Compiler
Garrett	GA	Nadine Jakubowski
Allegany	AL	J.B. Churchill
Washington	WA	Mark Abdy
Frederick	FR	David Smith
Montgomery	MO	Diane Ford
Carroll	CA	Don Jewell
Howard	HO	Kevin Heffernan & Chuck Stirrat
Baltimore	BA	Joel Martin
Prince George’s	PG	Fred Fallon
Anne Arundel	AA	Dotty Mumford
Charles	CH	Lynne Wheeler
Calvert	CT	Sherman Suter
St. Mary’s	SM	J. Tyler Bell
Harford	HA	Rick Cheicante
Cecil	CE	Richard Donham
Kent	KE	Walter Ellison
Talbot	TA	David Palmer
Caroline	CN	Debby Bennett
Dorchester	DO	Harry Armistead
Somerset	SO	Paul Bystrak
Wicomico	WI	Travis Clemens
Worcester	WO	Marcia Balestri

A total of 461 counters in 279 parties reported 244 species and 127,262 individual birds (Tables 2 and 3).

Among the most notable sightings reported were: 115 Ruddy Turnstones (9 in Dorchester, 4 in Kent, 102 in Worcester), 9 Purple Sandpipers (Worcester), 218 Northern Gannett (Anne Arundel), 213 Brown Pelicans (1 in Calvert, 52 in St. Mary's, 140 in Dorchester, and 20 in Wicomico), 1 White Ibis (Worcester), 1 Swallow-tailed Kite (Howard) (Figure 1), 1 Loggerhead Shrike (Garrett) (report submitted to MD/DC Records Committee), 34 Gray-cheeked Thrushes (ranging from 1 to 8 each in 12 different counties), 322 Swainson's Thrushes (a nice rebound from only 22 individuals last year; reported from 17 counties with Howard high at 106), 4604 Cedar Waxwings (more than 3 times higher than previous years, reported from every county except Somerset, with a Howard high at 1049), 121 Canada Warblers (up from a low of 7 last year; reported from 18 counties with Howard high at 29), 17 Dickcissels (9 in Allegany, 1 in Carroll, 3 in Prince George's (Figure 2), 1 in Harford, 3 in Kent) (Tables 4 and 5).

Additionally, 2 Swainson's Warblers were reported from Calvert. The report was submitted to the MD/DC Records Committee, but was not accepted by the Committee.

Notable misses this year were Blue-winged Teal, Northern Shoveler, and Black-necked Stilt. White-crowned Sparrows continue to decrease, with only 4 individuals reported (1 from Garrett, 2 from Allegany, 1 from Howard).

The 2015 May Count was notable for low numbers of most thrushes and eighteen species of warblers. This year showed improved numbers, especially for Gray-cheeked and Swainson's Thrushes, as noted above. Counts for all eighteen species of warblers noted as low in 2015 were higher, as well. The cases in which 2016 numbers were lower than 2015 were not large differences, and in two cases were decreases from counts noted as significantly high in 2015: Prothonotary Warbler (123 in 2016 vs. 184 in 2015) and Yellow-throated Warbler (92 vs. 153.)

Comparing data from 2003, 2013, 2014, 2015, and 2016 there have been clear increases in Black and Turkey Vultures, Common Raven, Bald Eagle, and Brown-headed Nuthatch. Blue Jay numbers this year were about twice the numbers reported in previous years. Raptor numbers were improved this year compared to 2015, for example, 502 Bald Eagles vs. 401.

This was a good year in terms of the increase in number of individual birds seen, counties reporting, and counters involved in the May Count, but a few large population counties would do much better with more people in the field.

Table 2. 2016 Maryland May Count: Western Shore summary.

	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA
Parties	24	6	10	12	1	12	34	42	28	21	8	10	15	10
Observers	42	6	18	21	4	18	70	44	49	30	13	16	15	33
Start time	0530	0540	0430	0445	0700	0500	0445	0000	0530	0530	0530	0000	0300	0005
End time	0000	1900	1900	1930	1400	2100	2330	2156	2030	1930	2000	2018	2030	2045
Driving														
hours	61.15	24	32	47.25			27	34.8	1	53.3	7.5	21	4.5	85.82
miles	464	112	283	481			268.5	426.4	24	108	49.5	268	23.75	324.2
Walking														
hours	60.15	18	24.5	35.5			43	190.1	73.5	91	68.5	37.5	49.45	18.75
miles	48.75	17	18.5	23.2	5.5		29.1	143.5	72.76	59	61	31	29.75	16.5
Owling														
hours	3.75		1.5	1.25			0.75	1.8		4		1	1.67	2.25
miles	43		3				0	5		5		0.5	6	64
Stationary														
hours	23		5.5	6.5	0.25		18	4	19.2	14	15.5	5	5.42	6.5
Other conveyance											golf cart			
hours	3.55										2	3		
miles	20.5										3	3		
Total species	147	136	121	144	77	130	148	139	141	147	123	147	138	151
Total individuals	7445	2725	4237	8842	452	5904	14,732	4624	6672	9597	5476	6090	6232	6493

Table 3. 2016 Maryland May Count: Eastern Shore and total summary.

	CE	KE	TA	CN	DO	SO	WI	WO	West & East Total
Parties	4	5	10	11	9	2	5		279
Observers	6	7	14	16	14	2	8	15	461
Start time	0438	0520	0400	0430	0000	0500	0508	0500	
End time	1500	2045	2000	2130	2100	1730	1530	1952	
Driving									
hours		18.5	42	30	69	4.5	4.35	30.15	628.97
miles		141	108	292	584	8.1	26.3	350	4510.75
Walking									
hours		16.5	15	12	29.5	20	2	7	875.8
miles		13	12.1	6.5	13	16	2.5	3.5	664.26
Owling									
hours			2	2.75	8			0.5	31.22
miles			27	44	32			2	231.5
Stationary									
hours		0.5	5.25	13	1.5	3.583	6	3.7	156.403
Other conveyance				golf cart	boat				
hours				1	2				11.55
miles				1					27.5
Total species	100	135	133	131	166	90	95	161	244
Total individuals	1467	5798	3607	7760	10,215	1603	1323	5968	127,262



Figure 1. Swallow-tailed Kite (*Elanoides forficatus*). Alpha Ridge Landfill, Howard County, Maryland, 14 May 2016, photographed by Joe Hanfman.



Figure 2. Dickcissel (*Spiza americana*). Beltsville Agricultural Research Center, Prince George's County, Maryland, 14 May 2016, photographed by Jack Saba.

Table 4. 2016 Maryland May Count: Western Shore observed species.

(* = report submitted to MD/DC Records Committee)

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA
Canada Goose	316	86	182	329	43	331	674	116	259	267	181	71	112	284
Mute Swan	65			1									10	9
Tundra Swan				1										1
Wood Duck		28	9	24	1	2	40	5	95	43	32	14	2	23
Gadwall														
American Black Duck					2						2		1	2
Mallard	63	27	85	95	4	31	82	64	57	74	28	57	40	25
Green-winged Teal														
Canvasback														
Ring-necked Duck				1										
Lesser Scaup	1									3				
unidentified scaup									1					
Surf Scoter														
Long-tailed Duck														
Bufflehead	2			2		1								
Hooded Merganser				10						4				3
Common Merganser	5			1	1									
Red-breasted Merganser											1	1		
Ruddy Duck			2									8	21	
unidentified duck														
Northern Bobwhite				1										
Ruffed Grouse	7	1												
Wild Turkey	39	11	19	2		5	12		11	4	20	10	8	32
Pied-billed Grebe		2					5	1					1	
Horned Grebe														
Rock Pigeon	58	132	88	87	1	41	86	44	22	36	1		16	33
Mourning Dove	151	36	111	195	12	107	263	85	117	139	114	71	68	124
Yellow-billed Cuckoo	3	7	15	19	1	9	17	7	26	12	2	8	6	21
Black-billed Cuckoo	3	2		1		1	2							1
Common Nighthawk							10	26	4	19		4		7
Chuck-will's-widow												3	6	
Eastern Whip-poor-will	3		5					1					1	20
Chimney Swift	23	39	45	111	13	61	127	104	95	118	83	43	20	81
Ruby-throated Hummingbird	60	8	7	13	2	16	15	17	8	14	13	10	18	14
Clapper Rail												1	1	
King Rail														2
Virginia Rail						2						2		3
Sora										1		1	1	4
unidentified rail														
Common Gallinule		1		1				1						
American Coot		3	1	2			1	2	1					
Sandhill Crane	4													
American Oystercatcher														
Black-bellied Plover														
Semipalmated Plover	7											3	18	1
unidentified plover														
(mostly Black-bellied?)														
Killdeer	34	12	16	32		8	10	1	8	4	16	6	14	42
Ruddy Turnstone														

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA
Red Knot														
Sanderling													1	
Dunlin														
Purple Sandpiper														
Least Sandpiper	3	9					4	15	1	2		24	69	21
White-rumped Sandpiper	7													
Pectoral Sandpiper														
Semipalmated Sandpiper		1				2						4	10	6
unidentified sandpiper (mostly Dunlin?)														
Short-billed Dowitcher												1		
Wilson's Snipe	1						7		1					
American Woodcock	4		8				2							7
Spotted Sandpiper	27	14	13	15	2	8	37	16	26	22	12	22	11	13
Solitary Sandpiper	9	2	1	10	1	5	33	4	15	5	1	4	9	21
Greater Yellowlegs				1					5			2	1	1
Willet														
Lesser Yellowlegs	1	4	1						2		1			1
Bonaparte's Gull			3									14	50	
Laughing Gull									16	8	3	31	50	
Ring-billed Gull						3		18	2	61	176	162	527	20
Herring Gull								6		49	4	41	54	
Great Black-backed Gull								3		27		75	20	
unidentified gull.								5	1				15	
Least Tern								1		10		2		14
Caspian Tern								1	2	3	2			5
Common Tern								2		4	26	1		
Forster's Tern											4			
Royal Tern														
unidentified tern									2				5	
Black Skimmer														
Common Loon	5	2	3			10	2	2	1	3	4		1	
Northern Gannet										218				
Double-crested Cormorant	17		26	3	1	5	63	29	160		163	371	181	492
American White Pelican														
Brown Pelican												1	52	
American Bittern							2							
Least Bittern										1			1	3
Great Blue Heron	1	2	8	20	9	20	37	20	62	72	39	20	34	72
Great Egret							1	1	3	2	1		4	2
Snowy Egret								1		2		10		
Little Blue Heron								3						
Tricolored Heron														
Cattle Egret										4				
Green Heron	8	5	1	8	2	4	26	4	8	8	5	3	4	6
Black-crowned Night-Heron				11			1					1		
Yellow-crowned Night-Heron						2		4						
White Ibis														
Glossy Ibis												5		1
Black Vulture		2	16	33		86	106	8	56	35	119	19	55	28
Turkey Vulture	69	43	61	103	2	86	225	46	77	199	75	90	58	136
Osprey	1	1	4	5		2	26	15	53	101	176	77	119	51
Swallow-tailed Kite							1							

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA
Mississippi Kite														1
Bald Eagle	5	1		2		5	13	5	36	62	53	7	25	51
Northern Harrier			1	1			2	2	3	6		1		3
Sharp-shinned Hawk						1	2	2	2	49	2	1		2
Cooper's Hawk	1	1	1	1		8	6	3	4	9		3	1	2
Red-shouldered Hawk			6	15	1	14	72	21	24	15	9	9	7	12
Broad-winged Hawk	6		1	3	1		8	1	2	136	1		2	4
Red-tailed Hawk	8	2	12	23		18	19	9	21	15	8	8	2	18
unidentified hawk														
Barn Owl											16			
Eastern Screech-Owl	1	3		4		1	1		1	2	1	5		1
Great Horned Owl	1					1	6		1	1				1
Barred Owl	5	1	2	5		4	13	1	4	6	3	13	1	7
Belted Kingfisher	1	2	3	5		6	15	7	5	7	4	5	2	4
Red-headed Woodpecker	13			6		6	3	3	1		7	12	9	5
Red-bellied Woodpecker	38	22	43	135	9	84	237	63	69	70	56	62	28	49
Yellow-bellied Sapsucker	6													
Downy Woodpecker	36	12	27	45	11	44	98	35	31	37	11	28	15	23
Hairy Woodpecker	33	5	7	5	3	10	19	14	9	7	4	11	3	6
Northern Flicker	39	12	8	13	1	17	31	9	18	10	4	8	10	18
Pileated Woodpecker	19	10	20	23	1	16	49	10	16	13	11	18	11	14
American Kestrel	6	1	3	8		5	3		5		1			2
Merlin										2				
Peregrine Falcon										1				
Olive-sided Flycatcher		2												
Eastern Wood-Pewee	14	9	19	92	4	40	135	38	46	49	52	79	55	28
Acadian Flycatcher	2	5	11	51	1	36	116	6	44	42	53	88	50	31
Alder Flycatcher	1	1					1		1					
Willow Flycatcher	1	1	1	5		8	17	3		1				4
Alder/Willow Flycatcher (Traill's Flycatcher)														
Least Flycatcher	16	2		1			2	3	1			1		
unidentified <i>Empidonax</i>				4		2								
Eastern Phoebe	25	10	19	36		32	61	23	19	6	14	10	10	23
Great Crested Flycatcher	13	8	43	91	5	41	93	25	49	45	49	54	68	45
Eastern Kingbird	17	10	20	67	1	46	103	30	104	77	38	60	37	70
Loggerhead Shrike*	1													
White-eyed Vireo	2	4	4	13		24	50	11	43	23	42	58	46	35
Yellow-throated Vireo	1	2	6	9	1	6	14	15	24	4	14	16	3	23
Blue-headed Vireo	33	2		3	1	2	2	4	1	9			2	
Philadelphia Vireo								2						
Warbling Vireo		9	14	33	4	16	14	31	3	2				16
Red-eyed Vireo	236	43	86	235	26	113	388	109	154	195	122	190	211	94
Blue Jay	178	78	114	159	7	154	562	292	110	2244	44	48	59	115
American Crow	277	75	147	159	3	186	383	86	70	107	107	97	158	108
Fish Crow		4	17	36	1	14	53	16	29	37	18	27	43	14
unidentified crow				30	1		137	9		5		7	23	8
Common Raven	26	11	2	4		2	2	5	1	1				1
Horned Lark			11	9		1	16	1				8	10	2
Purple Martin	34		32	28		22	83	3	28	16	128	30	82	10
Tree Swallow	298	25	42	71	2	74	125	53	196	168	40	32	15	181
N. Rough-winged Swallow	85	15	11	35	3	17	32	32	13	22	10	13	2	46
Bank Swallow	4	1		1		1		1	4	11				6

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA
Cliff Swallow	149	70	46	16		51	39		1	2				
Barn Swallow	620	25	96	162	4	156	248	58	107	208	168	89	163	248
Carolina Chickadee			64	144	9	83	261	64	83	65	50	119	104	78
Black-capped Chickadee	117	22	9											
Tufted Titmouse	68	36	80	119	6	97	260	73	83	84	82	114	97	54
Red-breasted Nuthatch	6	5												
White-breasted Nuthatch	39	17	28	41	5	30	72	46	26	23	12	22	9	17
Brown-headed Nuthatch												4	13	
Brown Creeper	9	3		1										
House Wren	56	20	23	100	5	53	99	37	12	18	2	3	6	20
Winter Wren	1	1												
Sedge Wren	1						1							
Marsh Wren	1							1		4	4	3	4	3
Carolina Wren	9	34	56	157	14	54	165	57	79	60	67	86	101	44
Blue-gray Gnatcatcher	15	11	35	95	3	78	192	46	109	95	64	138	38	84
Golden-crowned Kinglet	4	1												
Ruby-crowned Kinglet	3			1			12	3		2		4		
Eastern Bluebird	31	64	94	95		86	180	29	79	62	36	36	42	80
Veery	13	1	1	1		15	19	11	3	2		10	6	7
Gray-cheeked Thrush				2			8	2	3		1	6	3	2
Swainson's Thrush	1		6	13	1	7	106	49	22	22	5	28	7	29
Hermit Thrush	11	1				1	6							
unidentified <i>Catharus</i> thrush														
Wood Thrush	24	13	56	137	2	103	244	51	65	55	53	73	54	25
American Robin	428	207	176	569	19	186	520	227	270	328	162	107	148	171
Gray Catbird	138	82	127	277	19	301	438	149	87	16	17	78	98	177
Brown Thrasher	37	11	36	35		31	26	5	23	12	45	20	34	13
Northern Mockingbird		17	58	97	1	57	155	26	55	70	90	48	75	68
European Starling	265	180	393	801	7	307	594	208	413	207	306	83	222	440
Cedar Waxwing	21	24	28	210	42	244	1049	480	427	942	136	431	88	189
House Sparrow	78	65	109	187	26	103	236	94	66	50	140	78	72	59
American Pipit									1					
House Finch	40	37	47	95	5	100	144	54	41	52	59	55	28	40
Purple Finch	25	3	3											
Pine Siskin	11	3												
American Goldfinch	213	84	104	226	7	227	461	97	111	277	64	94	124	93
Evening Grosbeak		3												
Ovenbird	122	13	28	91	1	58	158	25	71	52	42	52	48	35
Worm-eating Warbler	1	10	5	9		5	9	1	3	4	2	21	9	3
Louisiana Waterthrush	9	2	4	15	1	5	27	4	4	5	16	13	6	11
Northern Waterthrush	3	10		2		1	9	7	7	5	2	7	2	11
Golden-winged Warbler	2			1										
Blue-winged Warbler		1	1	1		11	10		1	3				3
Black-and-white Warbler	37	3	9	24	2	7	34	19	11	17	8	35	26	12
Prothonotary Warbler	1		2	5					6	12	8	1		5
Tennessee Warbler	1	3		1			12	1		1				
Nashville Warbler							3	3				1		
Mourning Warbler	1	1	1			1		1	1					
Kentucky Warbler	5	2	1	4		2	12	4		1	11	8	10	10
Common Yellowthroat	196	26	27	76	2	104	265	60	128	84	80	147	128	99
Hooded Warbler	10	14	5	2		2	8	4	5	6	29	47	12	3
American Redstart	68	29	26	46		41	151	67	65	25	22	61	36	67
Cape May Warbler				4		1	8	3	3	1		2		4

Species	GA	AL	WA	FR	MO	CA	HO	BA	PG	AA	CH	CT	SM	HA	
Cerulean Warbler	7	8	15	1			3					2		4	
Northern Parula	19	4	5	21	4	18	137	43	48	39	76	114	41	44	
Magnolia Warbler	35	5	5	5	1	1	26	28	24	16	2	30	26	28	
Bay-breasted Warbler		3		6		2	6	1	5		8		5	2	
Blackburnian Warbler	24			2			5	9	3	5		4		2	
Yellow Warbler	71	35	7	34	2	60	72	33	16	18	11	14	13	55	
Chestnut-sided Warbler	101	4	3	3		2	23	23	13	9		8	3	7	
Blackpoll Warbler	1	10	11	24	5	9	38	19	74	28	19	80	34	29	
Black-throated Blue Warbler	36	3	1	11			18	76	37	16	11	1	53	13	35
Palm Warbler		1			2	1	2		1	3				1	
Pine Warbler	1	7	4	2		1	2	4	5	3	5	16	59	2	
Yellow-rumped Warbler	9	2	15	35	2	16	77	56	38	22	6	17	2	44	
Yellow-throated Warbler			2	1			2		2	3	8	33	8	1	
Prairie Warbler		5	16	6		13	24	2	14	12	11	8	28	23	
Black-throated Green Warbler	54	6	3	9		2	16	11	11	9	2	25	2	5	
Canada Warbler	8		2	1	1	4	29	14	15	12	4	7	1	10	
Wilson's Warbler	2			1			1	3	2	1	2	5	3	2	
Yellow-breasted Chat	1		4	6		7	12	4	9	10	4	8	7	30	
unidentified warbler															
Eastern Towhee	162	36	33	83	1	61	149	13	47	31	15	39	45	26	
Chipping Sparrow	146	30	84	160	3	125	231	34	110	66	106	104	131	97	
Field Sparrow	52	4	39	70		59	42	5	18	4	20	7	12	12	
Vesper Sparrow	1	2		6			2								
Savannah Sparrow	7	3		2		6	20		4	9		7	3	8	
Grasshopper Sparrow	10	2	9	11		9	11		12	3	9	11	48	18	
Henslow's Sparrow		2													
Saltmarsh Sparrow															
Seaside Sparrow								3				1	2		
Song Sparrow	189	67	48	134	5	106	123	22	35	65	7	40	13	25	
Lincoln's Sparrow		2					1		2	1		2	21		
Swamp Sparrow	40	1	1			1	2	4	2	1	6	7	3	18	
White-throated Sparrow	2	4	7	10	1	26	41	37	4	11	2	10	5	15	
White-crowned Sparrow	1	2					1								
unidentified sparrow															
Dark-eyed Junco	6														
Summer Tanager									4	4	8	42	31		
Scarlet Tanager	84	12	16	64	4	47	137	34	64	23	53	33	30	61	
Northern Cardinal	92	103	119	471	21	271	659	162	219	256	169	198	237	186	
Rose-breasted Grosbeak	63	10	5	5		3	13	9	1	6	1	7	1	3	
Blue Grosbeak				7			4	2	22	10	11	18	20	24	
Indigo Bunting	73	39	86	191	4	63	228	38	119	102	147	108	127	102	
Dickcissel		9				1			3					1	
Bobolink	72	33	12	34		3	180		87	105		31	19	75	
Red-winged Blackbird	400	83	55	407	8	183	618	70	482	436	270	256	237	244	
Eastern Meadowlark	40	28	15	33		11	12		9	2	5	13	35	18	
Rusty Blackbird	1														
Common Grackle	117	79	228	361	7	76	231	87	155	176	328	205	431	117	
Boat-tailed Grackle															
Brown-headed Cowbird	44	28	63	69	5	72	152	34	46	96	116	60	29	95	
unidentified blackbird									13						
Orchard Oriole	16	11	5	15	3	18	53	16	39	16	38	28	13	67	
Baltimore Oriole	89	19	72	76	8	76	127	40	19	7	5	6	1	38	

Table 5. 2016 Maryland May Count: Eastern Shore and total observed species. (* = report submitted to MD/DC Records Committee)

Species	CE	KE	TA	CN	DO	SO	WI	WO	Total
Canada Goose	14	81	79	177	305		46	239	4192
Mute Swan									85
Tundra Swan					1				3
Wood Duck		23	7	27	22	1	2	1	401
Gadwall				2				1	3
American Black Duck		2	2	2	27	5		19	64
Mallard		104	83	38	168	3	5	37	1170
Green-winged Teal			2		1				3
Canvasback		1			3				4
Ring-necked Duck									1
Lesser Scaup									4
unidentified scaup								1	2
Surf Scoter			3						3
Long-tailed Duck			9						9
Bufflehead								5	10
Hooded Merganser		3							20
Common Merganser									7
Red-breasted Merganser					6				8
Ruddy Duck		3			47				81
unidentified duck					2				2
Northern Bobwhite				5	74				80
Ruffed Grouse									8
Wild Turkey	1	13	20	66	23	1	5	5	307
Pied-billed Grebe									9
Horned Grebe			2						2
Rock Pigeon	10	9	10	36	34		1	15	760
Mourning Dove	24	65	39	128	93	5	25	20	1992
Yellow-billed Cuckoo	7	10	3	13	30	2	17	25	260
Black-billed Cuckoo									10
Common Nighthawk		1			1			2	74
Chuck-will's-widow			2	1	21		3	7	43
Eastern Whip-poor-will	8			3			1	2	44
Chimney Swift	4	82	49	402	71		1	21	1593
Ruby-throated Hummingbird		10	3	18	14	1	13	9	283
Clapper Rail					10	4		2	18
King Rail			2		3				7
Virginia Rail		3	3	1	36	2		3	55
Sora								1	8
unidentified rail					4				4
Common Gallinule					12				15
American Coot									10
Sandhill Crane									4
American Oystercatcher					2			19	21
Black-bellied Plover		221		50	2	18		638	929
Semipalmated Plover	4	14	275	3	11			9	345
unidentified plover (mostly Black-bellied?)						150			150
Killdeer	2	4	8	29	23		3	6	278
Ruddy Turnstone		4			9			102	115
Red Knot								6	6

Species	CE	KE	TA	CN	DO	SO	WI	WO	Total
Sanderling					4			3	8
Dunlin			79		270	263		756	1368
Purple Sandpiper								9	9
Least Sandpiper	2	36	66	59	124	15	3	89	542
White-rumped Sandpiper					1				8
Pectoral Sandpiper			3			11		1	15
Semipalmated Sandpiper	1	3			11	47		27	112
unidentified sandpiper (mostly Dunlin?)						450			450
Short-billed Dowitcher						46		52	99
Wilson's Snipe				10					19
American Woodcock				2	1				24
Spotted Sandpiper	2	5	8	12	24		2	11	302
Solitary Sandpiper		1	1	18	2			3	145
Greater Yellowlegs		3	1	12	18	20	1	12	77
Willet			1		18	14		30	63
Lesser Yellowlegs		6	1	5	22	3		44	91
Bonaparte's Gull		5	10	3	1				86
Laughing Gull		1	33	661	443	60	27	505	1838
Ring-billed Gull	2	279	15	410	20			20	1715
Herring Gull			51	3	75	7		128	418
Great Black-backed Gull		1		2	17	2		81	228
unidentified gull					4				25
Least Tern		4	8		6	1		15	61
Caspian Tern	1	7							21
Common Tern		2	6	2	4	3		80	130
Forster's Tern			33	1	19	8	39	30	134
Royal Tern					4	13		125	142
unidentified tern					47				54
Black Skimmer								9	9
Common Loon					4			2	39
Northern Gannet									218
Double-crested Cormorant	242	32	514	38	598	14	92	373	3414
American White Pelican					1				1
Brown Pelican					140		20		213
American Bittern				1					3
Least Bittern					2				7
Great Blue Heron	41	32	54	43	105	2	7	3	703
Great Egret		1	9		59	4	1	25	113
Snowy Egret			5	1	29	16		19	83
Little Blue Heron			1					3	7
Tricolored Heron					1				1
Cattle Egret			9	4				22	39
Green Heron		5	7	8	3			4	119
Black-crowned Night-Heron					3			2	18
Yellow-crowned Night-Heron								1	7
White Ibis								1	1
Glossy Ibis		4	19	1	1			59	90
Black Vulture	25	39	21	40	51		12	14	765
Turkey Vulture	18	152	85	184	247	18	52	85	2111
Osprey		1	116	103	43	171	28	6	1099
Swallow-tailed Kite									1
Mississippi Kite	1								2
Bald Eagle	9	29	18	26	138	3	9	5	502

Species	CE	KE	TA	CN	DO	SO	WI	WO	Total
Northern Harrier	2								21
Sharp-shinned Hawk		1			1				63
Cooper's Hawk		1	3	3	3	1			51
Red-shouldered Hawk	4	11		3	3	1	1	4	232
Broad-winged Hawk	2	1			1				169
Red-tailed Hawk	6	10	4	12	9	1		1	206
unidentified hawk					1				1
Barn Owl					1				17
Eastern Screech-Owl			2	3	4		2		31
Great Horned Owl			2	6	8				27
Barred Owl		9	5	7			2	1	89
Belted Kingfisher	1		2	2	4		1		76
Red-headed Woodpecker					18		1	4	88
Red-bellied Woodpecker	36	51	15	55	18	1	23	18	1182
Yellow-bellied Sapsucker									6
Downy Woodpecker	2	18	8	17	24	2	7	6	537
Hairy Woodpecker	1	9	4	4	4	2		1	161
Northern Flicker	3	4	3	7	12	3	1	1	232
Pileated Woodpecker	5	11	8	24	6	2	4	4	295
American Kestrel				4					38
Merlin								1	3
Peregrine Falcon									1
Olive-sided Flycatcher									2
Eastern Wood-Pewee	17	48	8	37	32	5	11	1	819
Acadian Flycatcher	11	50	4	8	8	1	12	21	651
Alder Flycatcher									4
Willow Flycatcher			1						42
Alder/Willow Flycatcher (Traill's Flycatcher)								1	1
Least Flycatcher		1							27
unidentified <i>Empidonax</i>									6
Eastern Phoebe	4	5	3	23	2		2	3	330
Great Crested Flycatcher	18	82	43	87	145	10	25	46	1085
Eastern Kingbird	2	28	23	26	79	2	14	19	873
Loggerhead Shrike*									1
White-eyed Vireo	13	20	4	17	40	8	21	45	523
Yellow-throated Vireo	3	2			1	1		9	154
Blue-headed Vireo									59
Philadelphia Vireo									2
Warbling Vireo		6		6					154
Red-eyed Vireo	68	126	19	53	97	2	11	47	2625
Blue Jay	25	45	17	79	23		10	15	4378
American Crow	43	30	62	105	134	6	40	51	2434
Fish Crow	7	20	15	23	28	3	4	29	438
unidentified crow					12				232
Common Raven									55
Horned Lark		15	12	63	7			19	174
Purple Martin		120	111	167	432	3	41	100	1470
Tree Swallow	20	50	46	41	251	8	3	34	1775
Northern Rough-winged Swallow	2	6	3	8	5				360
Bank Swallow		1	1		21				52
Cliff Swallow			3	6	4				387
Barn Swallow	4	96	125	175	275	11	31	67	3136

Species	CE	KE	TA	CN	DO	SO	WI	WO	Total
Carolina Chickadee	35	63	34	70	80	8	28	20	1462
Black-capped Chickadee									148
Tufted Titmouse	27	78	30	84	86	3	28	28	1617
Red-breasted Nuthatch									11
White-breasted Nuthatch	6	6	4	10				1	414
Brown-headed Nuthatch		3	5		43	8	2	14	92
Brown Creeper					1				14
House Wren	2	11	3	3	39	14	2	5	533
Winter Wren									2
Sedge Wren									2
Marsh Wren		3	2	2	62	16	10		115
Carolina Wren	9	83	19	49	90	10	47	30	1320
Blue-gray Gnatcatcher	9	60	4	13	67	11	19	55	1241
Golden-crowned Kinglet									5
Ruby-crowned Kinglet					1			1	27
Eastern Bluebird	2	23	21	71	28	1		11	1071
Veery	8	2	1		1				101
Gray-cheeked Thrush	2	3		1				1	34
Swainson's Thrush	16	7		2			1		322
Hermit Thrush				4					23
unidentified <i>Catharus</i> thrush					2				2
Wood Thrush	71	64	21	31	13	1	11	21	1188
American Robin	13	298	113	384	181		24	66	4597
Gray Catbird	45	64	25	48	51	9	9	67	2322
Brown Thrasher	5	21	20	30	14		3	7	428
Northern Mockingbird	8	58	30	73	85	1	14	26	1112
European Starling	21	381	95	889	404	11	13	122	6362
Cedar Waxwing	13	55	26	29	110		6	54	4604
House Sparrow	3	182	32	330	74		1	3	1988
American Pipit									1
House Finch		27	24	93	17		9	9	976
Purple Finch									31
Pine Siskin									14
American Goldfinch	13	107	25	81	76	4	16	20	2524
Evening Grosbeak									3
Ovenbird	74	66	7	27	62	11	29	45	1117
Worm-eating Warbler	6	5	3	2	15	1	6	8	128
Louisiana Waterthrush			1	1	2		3	6	135
Northern Waterthrush	1	8			2			5	82
Golden-winged Warbler									3
Blue-winged Warbler					1				32
Black-and-white Warbler	3	20	9	5	26		4	20	331
Prothonotary Warbler	1	4	2	15	20	2	8	31	123
Tennessee Warbler									19
Nashville Warbler									7
Mourning Warbler		1							7
Kentucky Warbler		9	2	2				10	93
Common Yellowthroat	25	92	41	38	286	23	31	52	2010
Hooded Warbler	15							1	163
American Redstart	9	26	14	16	49		4	34	856
Cape May Warbler					1			1	28
Cerulean Warbler									40
Northern Parula	5	26	9	10	20		5	21	709

Species	CE	KE	TA	CN	DO	SO	WI	WO	Total
Magnolia Warbler	3	7	6		14		2	11	275
Bay-breasted Warbler	2	1			3			1	45
Blackburnian Warbler		2	1		1			4	62
Yellow Warbler	2	4	7	3	13	1	1	12	484
Chestnut-sided Warbler		6	1	1	2			2	211
Blackpoll Warbler	2	14	14	17	12	1	4	10	455
Black-throated Blue Warbler	3	5	5	6	9	2		3	344
Palm Warbler				3					14
Pine Warbler	8	9	16	3	167	17	12	20	363
Yellow-rumped Warbler	7	6	3	7	7		2	4	377
Yellow-throated Warbler		2			5	1	4	20	92
Prairie Warbler	2		3	7	13	3	8	23	221
Black-throated Green Warbler	5	5		1		1		2	169
Canada Warbler	3	6	2		1			1	121
Wilson's Warbler					2				24
Yellow-breasted Chat	3	6		15	7	2	2	9	146
unidentified warbler					6				6
Eastern Towhee	31	21	1	12	25	8	8	16	863
Chipping Sparrow	8	118	36	98	166	6	29	30	1918
Field Sparrow	13	5	5	15	23		5	9	419
Vesper Sparrow		2		7					20
Savannah Sparrow			2		2				73
Grasshopper Sparrow		9	10	15	43		2	4	236
Henslow's Sparrow									2
Saltmarsh Sparrow					1			1	2
Seaside Sparrow					112	43		22	183
Song Sparrow	7	12	1	9	11	5	1	5	930
Lincoln's Sparrow									29
Swamp Sparrow					12			1	99
White-throated Sparrow	3	4	1	4				2	189
White-crowned Sparrow									4
unidentified sparrow					12				12
Dark-eyed Junco									6
Summer Tanager			2	9	33	1	5	17	156
Scarlet Tanager	27	40	6	15	15		2	14	781
Northern Cardinal	35	255	79	168	133	13	33	46	3925
Rose-breasted Grosbeak	1		7	1	2			5	143
Blue Grosbeak		24	20	49	74	4	9	16	314
Indigo Bunting	16	151	19	114	109	7	26	63	1932
Dickcissel		3							17
Bobolink	30	1	3		11			3	699
Red-winged Blackbird	41	398	212	320	921	46	104	155	5946
Eastern Meadowlark	5	2		4	21	3		8	264
Rusty Blackbird									1
Common Grackle	8	392	174	648	564	3	30	138	4555
Boat-tailed Grackle					13	7		16	36
Brown-headed Cowbird	19	100	23	103	118	7	13	43	1335
unidentified blackbird					2				15
Orchard Oriole	3	27	7	17	61	3	6	14	476
Baltimore Oriole	15	12	1	17	2			26	656

2016 Maryland Fall Count

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The annual Maryland Fall Count is held on the third weekend in September with the choice of Saturday or Sunday at the discretion of the county and/or compiler. In 2016, eleven of Maryland's 23 counties submitted results. Five counties counted on 17 September, six on 18 September (Table 1). Receiving results from eleven counties is a decrease in participation for the Fall Count. For several counties this seasonal count has been a long held tradition, with this year being the 26th count for Allegany, 23rd for Howard, and 21st for Dorchester.

Table 1: 2016 Maryland Fall Count: participating counties, county codes, survey dates, and compilers.

County	Code	Survey Date	Compiler
Allegany	AL	18 September 2016	Chuck Hager
Carroll	CA	17 September 2016	Don Jewell
Howard	HO	17 September 2016	Mike McClure, Chuck Stirrat
Baltimore	BA	17 September 2016	Joel Martin
Harford	HA	18 September 2016	Rick Cheicante
Cecil	CE	18 September 2016	Patricia Valdata, Sean McCandless
Prince George's	PG	18 September 2016	Dave Mozurkewich
Calvert	CT	18 September 2016	Sherman Suter
Kent	KE	18 September 2016	Walter Ellison
Caroline	CN	17 September 2016	Debby Bennett
Dorchester	DO	17 September 2016	Harry Armistead

As would be expected weather varied over the extent of the state and from Saturday to Sunday. Temperatures were generally warmer on Sunday with highs in the mid 80s° F (~29° C), with the exception of Allegany at 79° F (26.1° C); whereas the highs on Saturday were around 80° F (26.7° C), with the exception of Dorchester at 86° F (30° C). Lows ranged from 55° F (12.8° C) in Caroline to 71° F (21.7° C) in Calvert. All reported calm to light winds, generally increasing as the day proceeded. Most reported partly cloudy conditions throughout the day. There were no reports of precipitation for either day, except for Allegany which had heavy rain on Sunday afternoon. Many compilers described the birding as slow with limited migrants.

A total of 190 field observers in 127 parties turned up 198 species and 65,447 individual birds. They spent a total of 473.6 hours and covered 334.2 mi [537.8 km] on foot and spent 26.0 hours stationary. Birders spent 135.9 hours and 1723.4 mi [2773.5 km] birding by car. Observers covered 10.5 mi [16.9 km] in 9.5 hours by other modes of transport, including by boat. Participants in 7 counties reported spending 18.7 hours traveling 23.7 mi [38.1 km] while owling. Feeder watchers spent 30.8 hours (Table 2).

Table 2. 2016 Maryland Fall Count: summary.

	AL	CA	HO	BA	HA	CE	PG	CT	KT	CN	DO	Total
Total Species	92	104	125	93	54	50	114	123	108	97	148	198
Total Birds	1572	6854	12651	1984	540	228	8340	7068	4173	6882	15185	65,447
Start Time	0500	0630	0615	0645	1130	0807	0530	0600	0530	0430	0430	0345
Stop Time	1830	1900	2000	1846	1745	1148	2300	1830	1930	2130	1930	23:45
Parties	8	11	47	16	3	1	11	8	3	9	10	127
Individual People	9	25	62	17	3	1	16	12	5	14	26	190
Hours Driving	10.0	18.5	25.8				7.0	6.6	12.0	17.0	39.0	135.9
Miles Driving	160.0	204.4	258.9				92.4	32.7	109.0	262.0	604.0	1723.4
Hours Walking	23.8	46.8	180.5	29.5	3.0	2.0	52.0	34.0	16.0	34.0	52.0	473.6
Miles Walking	17.7	38.9	133.5	20.6	2.5	3.5	36.8	28.7	13.0	17.0	22.0	334.2
Hours Boating			0.5	3.2			4.5					8.2
Miles Boating			0.4	2.1			5.0					7.5
Stationary Hours		0.5	9.4	2.0		1.7		7.9		4.5		26.0
Feeder Hours	7.3	7.5	3.5		2.5		3.0	3.0		4.0		30.8
Hours Owling	2.5	0.3	2.0				1.5	0.4		5.0	7.0	18.7
Miles Owling		0.1	1.3				1.0	0.3		20.0	1.0	23.7
Hours Other										2.3		2.3
Miles Other										2.0		2.0

There was one species that was a write-in to the distributed checklist for this count, a single Tundra Swan found in Dorchester County. Additional species with only a single individual found statewide included Ruffed Grouse (Allegany), Eastern Whip-poor-will (Allegany), American Coot (Prince George's), American Avocet (Dorchester), Baird's Sandpiper (Allegany), Western Sandpiper (Dorchester), Little Blue Heron (Prince George's), Barn Owl (Calvert), Yellow-bellied Sapsucker (Caroline), Olive-sided Flycatcher (Prince George's), Yellow-bellied Flycatcher (Prince George's), Blue-headed Vireo (Allegany), Prothonotary Warbler (Calvert), and Grasshopper Sparrow (Calvert) (Table 3).

The following highlights were noted by compilers in their inputs. The 60 Red-breasted Nuthatches observed across the state (with only two misses) reflects this was a significant irruption year. Calvert observed that the total absence of swallows was unusual, suggesting that perhaps it was too "sultry" for them, however the presence of swallows seemed to be low for all counts west of the

Chesapeake Bay. In Dorchester, an American Avocet was a first record for their count, the 8 American White Pelicans were of note, the 365 Brown Pelicans were a new high (222 last year), and the 2 Orchard Orioles were a very late record. Despite excellent coverage, significant Dorchester misses were Eastern Meadowlark and Song Sparrow. In Howard, the 4 American Woodcocks were only the second record in 23 counts, and new high counts were Wild Turkey 14, Green Heron 37, Bald Eagle 15, and Eastern Screech-Owl 9.

There were 36 species that were observed in only one county. Fifteen of these were observed in Dorchester County, with the rest being 7 in Allegany, 5 in Calvert, 4 in Prince George's, 2 in Caroline, and 1 each in Harford, Howard, and Kent County. Twenty-two species were reported for all 11 counts.

Thank you to all participants and especially the compilers. I urge more participants to enjoy the experience and join in one of the 2017 counts that will be held on 16 or 17 September. I hope additional counties will have volunteers who choose to organize a count in the future and reverse a trend in decreasing interest and participation in organized seasonal counts.

Table 3. 2016 Maryland Fall Count: observed species.

Species	AL	CA	HO	BA	HA	CE	PG	CT	KE	CN	DO	Total
Canada Goose	35	589	1198	61	3		581	68	86	171	1247	4039
Mute Swan					2							2
Tundra Swan											1	1
Wood Duck	8		27	28	1		45	71	19	20	33	252
American Wigeon									16			16
American Black Duck		3					2	4	6	4	16	35
Mallard	24	203	154	88			229	96	873	31	562	2260
Blue-winged Teal		1					4	2	9			12
Northern Pintail									3	5	2	10
Green-winged Teal	3						12		67		111	193
Ruddy Duck									1		8	9
Northern Bobwhite										6	3	9
Ruffed Grouse	1											1
Wild Turkey	13	2	14				1	1		46	6	83
Pied-billed Grebe		1	1	1			8					11
Rock Pigeon	37	127	221	39	1		83	3	12	72	13	608
Mourning Dove	64	240	742	44	38		299	69	53	199	136	1884
Yellow-billed Cuckoo		4	4	1			3	7			4	23
Black-billed Cuckoo			1					1			1	3
Common Nighthawk			6	1					1			8
Eastern Whip-poor-will	1											1
Chimney Swift	36	43	182	17		4	246	11		15	30	584
Ruby-throated Hummingbird	8	34	33	1	3	2	8	16	8	24	8	145
Clapper Rail											6	6

Species	AL	CA	HO	BA	HA	CE	PG	CT	KE	CN	DO	Total	
Virginia Rail									2		41	43	
Sora							4				1	5	
Common Gallinule											2	2	
American Coot							1					1	
American Avocet											1	1	
Black-bellied Plover							1				2	3	
Semipalmated Plover				11			3	5			34	53	
Killdeer	5	59	44	45			32	21	16	4	128	354	
Stilt Sandpiper				4							1	5	
Sanderling								13			5	18	
Dunlin											42	42	
Baird's Sandpiper	1											1	
Least Sandpiper	18	7	25	27			24	1	14		85	201	
Pectoral Sandpiper	6	1		18			17				20	62	
Semipalmated Sandpiper		4		14			5	1			53	77	
Western Sandpiper											1	1	
Short-billed Dowitcher											2	2	
Wilson's Snipe										4	2	6	
American Woodcock			4								1	5	
Spotted Sandpiper			1	3			1	1		6	3	15	
Solitary Sandpiper	1		2	3			2		1			9	
Greater Yellowlegs	1	1		7			2		14		25	50	
Lesser Yellowlegs	1	1	1	36			28		4		20	91	
unidentified shorebird											100	100	
Laughing Gull				157			2	576	791	284	842	1192	3844
Ring-billed Gull			9	9			112	179	36	45	246	636	
Herring Gull				3			1	186	13		381	584	
Great Black-backed Gull				19			1	1464	15		67	1566	
unidentified gull				200				420		73		693	
Caspian Tern				2		1	10	2	17		45	77	
Black Tern							2					2	
Common Tern								7	39	9	18	73	
Forster's Tern							18	351	322	3	331	1025	
Royal Tern							9	60	30		265	364	
Double-crested Cormorant		5	18	50		15	48	649	153	14	233	1185	
American White Pelican											8	8	
Brown Pelican								6			365	371	
Great Blue Heron	2	10	35	16	1		29	16	26	18	67	220	
Great Egret		2	9				44	4	3	2	108	172	
Snowy Egret							5	8	2		104	119	
Little Blue Heron							1					1	
Tricolored Heron											4	4	
Cattle Egret											40	40	
Green Heron	1	11	37	4	1		11	1	2	1	4	73	
Black-crowned Night-Heron			1	1					1		1	4	
Yellow-crowned Night-Heron				1			1					2	
Glossy Ibis											5	5	
Black Vulture	3	31	106	13		3	49	37	16	88	32	378	

Species	AL	CA	HO	BA	HA	CE	PG	CT	KE	CN	DO	Total
Turkey Vulture	24	158	205	29	5	4	76	80	149	240	383	1353
Osprey			12	4		1	6	26	6	9	29	93
Bald Eagle	3	5	15	7	2	1	8	42	69	20	149	321
Northern Harrier	1	1	1				1	1		2	12	19
Sharp-shinned Hawk	4	3	6			2	1	1	3	1	1	22
Cooper's Hawk	1	4	15	4			5	2	1	3	4	39
unidentified <i>Accipiter</i>			2									2
Red-shouldered Hawk	2	9	59	6			16	6	1	3	5	107
Broad-winged Hawk	3		3				1				8	15
Red-tailed Hawk		15	15	2			13	3	6	7	20	81
unidentified <i>Buteo</i>	2											2
Barn Owl								1				1
Eastern Screech-Owl	1	3	9		1	3	3	2	2	5	22	51
Great Horned Owl		1	1						3	4	24	33
Barred Owl	1	2	11		1			4	5	7	2	33
Belted Kingfisher		26	35	12	1	1	8	7	5	9	14	118
Red-headed Woodpecker		4				1	6	1			20	32
Red-bellied Woodpecker	22	92	208	24	4	2	49	50	49	39	22	561
Yellow-bellied Sapsucker										1		1
Downy Woodpecker	12	57	130	19	3	3	35	57	27	36	50	429
Hairy Woodpecker	5	10	26	3	1	3	10	12	9	7	7	93
Northern Flicker	7	55	90	22	1	4	20	13	23	8	35	278
Pileated Woodpecker	17	18	54	6	3	1	14	17	11	22	22	185
American Kestrel	2	8	14				17	2	8	9	29	89
Merlin			2								6	8
Peregrine Falcon		1									1	2
Olive-sided Flycatcher							1					1
Eastern Wood-Pewee	6	34	59	10	2	2	30	45	28	14	21	251
Yellow-bellied Flycatcher								1				1
Acadian Flycatcher			3				7	25	1	1	1	38
Willow Flycatcher		1	1									2
Traill's Flycatcher	2		3						3			8
Least Flycatcher		1	2	1		1		1			1	7
unidentified <i>Empidonax</i>		13	9		1	1		3			3	30
Eastern Phoebe	22	32	39	17			26	18	3	9	9	175
Great Crested Flycatcher	1	2	3	2		1	2	7	5	1	14	38
Eastern Kingbird			2		1			1			6	10
White-eyed Vireo		10	24	1		1	18	47	13	8	28	150
Yellow-throated Vireo	1	4	4	2				8	2			21
Blue-headed Vireo	1											1
Philadelphia Vireo	3	2	2	2				2				11
Warbling Vireo	1		2	2				1				6
Red-eyed Vireo	15	26	46	10		5	12	75	22	5	19	235
Blue Jay	53	247	609	80	4	21	105	89	68	126	139	1541
American Crow	104	373	480	52	7	5	99	239	29	133	263	1784
Fish Crow		12	44	7		45	77	39		82	7	313
unidentified crow			311	18			86	4		30	10	459
Common Raven	10		4				1					15

Species	AL	CA	HO	BA	HA	CE	PG	CT	KE	CN	DO	Total
Horned Lark		40	10						25	18	18	111
Tree Swallow			1						107	569	779	1456
N. Rough-winged Swallow	4								7	4	12	27
Barn Swallow		2									11	13
Carolina Chickadee		151	269	30	7	5	66	144	74	126	148	1020
Black-capped Chickadee	35											35
Tufted Titmouse	31	108	199	18	7	4	55	158	46	98	123	847
Red-breasted Nuthatch	2	7	7		2		5	1	10	5	21	60
White-breasted Nuthatch	25	59	125	14	4	2	28	44	8	22	1	332
Brown-headed Nuthatch								5	4		77	86
Brown Creeper			1							2		3
House Wren		15	31	9	1	4	14	10	14	1	27	126
Winter Wren			1	1								2
Marsh Wren											8	8
Carolina Wren	23	96	291	35	2	7	84	109	73	77	112	909
Blue-gray Gnatcatcher		7	17			1	6	7	4	2	27	71
Golden-crowned Kinglet	6											6
Ruby-crowned Kinglet		1						1				2
Eastern Bluebird	22	177	211	21	6		48	52	40	45	64	686
Veery	1	1	5	1				14	8			30
Gray-cheeked Thrush		1	1									2
Swainson's Thrush	5		6					1	4			16
Hermit Thrush		1								3		4
Wood Thrush	2	13	28	4			4	9	13	2	3	78
American Robin	24	430	479	74			170	31	17	140	402	1767
Gray Catbird	16	273	343	45	2	6	64	25	33	13	34	854
Brown Thrasher	5	9	6	2		1	10	12	24	2	16	87
Northern Mockingbird	4	59	82	5	3		37	17	38	60	52	357
European Starling	77	1319	2572	119			594	37	235	1211	1099	7263
Cedar Waxwing	305	83	93		2	20	21		5	21	14	564
House Sparrow	41	219	286	36	1		183	32	75	168	34	1075
House Finch	12	122	153	7	12	1	58	26	23	40	4	458
Purple Finch	3											3
American Goldfinch	93	178	490	69	18	3	78	54	58	53	49	1143
Ovenbird		2	3	1	1	1		1			2	11
Worm-eating Warbler			1					1				2
Northern Waterthrush			6					5	1		2	14
Blue-winged Warbler			1				3					4
Black-and-white Warbler	1	9	29	4	2	1	12	17	10	7	13	105
Prothonotary Warbler								1				1
Tennessee Warbler	4	2	2	1		3						12
Nashville Warbler	1		1									2
Common Yellowthroat	7	54	119	22	5	9	31	40	43	14	49	393
Hooded Warbler			1					8				9
American Redstart	2	21	73	6	3	1	15	27	36	23	48	255
Cape May Warbler	6					2		1	1		2	12
Northern Parula		5	18	2	1	2	6	9	9	4	6	62
Magnolia Warbler	10	6	35	6	1		6	8	9	7	3	91

Species	AL	CA	HO	BA	HA	CE	PG	CT	KE	CN	DO	Total
Bay-breasted Warbler	2	1										3
Blackburnian Warbler	3	2	2									7
Yellow Warbler			3					2		3	5	13
Chestnut-sided Warbler		2	10	4			4	4	4			28
Blackpoll Warbler	4						2				1	7
Black-throated Blue Warbler	5	6	9	1		1	1	7		2	1	33
Palm Warbler			10	5	12		2	2	3	3	5	42
Pine Warbler		4	2	2			1	15	7	6	86	123
Yellow-rumped Warbler (Myrtle)										7		7
Yellow-throated Warbler								3				3
Prairie Warbler	1		2		2				2		3	10
Black-throated Green Warbler	22	9	10				1	2	3	1	1	49
Canada Warbler	1		4									5
Wilson's Warbler			2	2	1							5
Yellow-breasted Chat		2						3				5
unidentified warbler			10	1		3	1				8	23
Eastern Towhee	13	23	45			1	8	22	5	4	9	130
Chipping Sparrow	38	57	191	21	23		48	120	90	68	55	711
Field Sparrow	9	4	10				1	4	7	8	3	46
Savannah Sparrow		1	3		1						5	10
Grasshopper Sparrow								1				1
Seaside Sparrow											14	14
Song Sparrow	14	34	57	14	2		10	5	1	2		139
Swamp Sparrow			1	1							1	3
unidentified sparrow											1	1
Summer Tanager							3	12		2	5	22
Scarlet Tanager	19	8	8	4	2	1	5	7	14	5	1	74
Northern Cardinal	41	217	397	58	10	11	143	183	155	132	86	1433
Rose-breasted Grosbeak	5	4	5	1			3	3				21
Blue Grosbeak			6	3	8		6	15	12	37	61	148
Indigo Bunting	3	9	91		9		19	52	22	30	9	244
Bobolink		1	75			2		1	51	1	717	848
Red-winged Blackbird		370	109	24			22	173	4	117	1934	2753
Eastern Meadowlark			12									12
Common Grackle	30		6	45	300		3064	14	26	1050	291	4826
Boat-tailed Grackle											8	8
Brown-headed Cowbird		20	138		3		80	5		125	942	1313
unidentified blackbird							1					1
Orchard Oriole											2	2
Baltimore Oriole		2	2				2	1			1	8

MARYLAND BIRDLIFE

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Contributors should prepare manuscripts according to the following instructions.

Title: The title should be brief, concise, and pertinent.

Abstract: An abstract is required for all long articles; suggested for all biologic studies more than two (2) pages in length; but is not needed for notes, distribution reports, or short observations (especially if two pages or shorter in length). The abstract should provide a capsule description of the main thrust, methods and essential findings of the article. It should contain the scientific name of the main subject species.

Text: Manuscripts should be double-spaced, lines numbered, and submitted in MS Word™ by e-mail or on a CD. Please identify respective file name(s) for text, figure titles, and descriptions of graphs or figures. First mention of a biological organism, in the abstract and text should include the full scientific name in italics. Carefully check the spelling of all scientific names. Capitalize the first letter of each word comprising the “official” common name for faunal species. Short articles and general notes (20 pages or less) are preferred. Color “copy ready” illustrations, pictures, or digital images are preferred.

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Tables: Tables, graphs and line drawings should be created electronically in black and white. Color should only be used when absolutely necessary for clarity.

Illustrations: Photographs or high-definition images may be accepted if necessary or desired by the author(s) to support the text. Photographs should be submitted in color. Figure numbers, as cited in the text, and figure legends should be keyed to each respective photograph.

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